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ABSTRACT

This resource guide assists teachers in offering optimum educational opportunities to visually impaired students. Introductory material describes the range of visual impairments and the cooperative process recommended for the planning and implementation of students' education programs. Answers are provided to some common concerns of teachers with visually impaired students in their classrooms. Curriculum suggestions are offered for specific courses in the Primary, Junior, and Senior Divisions, followed by a section on the educational programming needs of the multihandicapped visually impaired. Three skills essential for the visually handicapped individual are addressed: listening skills, orientation and mobility, and life skills. This is followed by a review of sight-enhancement and sight-substitution aids for both the partially sighted and the blind. A section on assessment and evaluation offers guidance on the medical and educational assessments necessary to ensure that the student's program is tailored to his or her needs. Appendices provide samples of relevant assessment forms and lists of additional resources and services. (JDD)

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RESOURCE GUIDE
1987

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RESOURCE GUIDE
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CONTENTS

INTRODUCTION 5
CLASSIFICATIONS OF VISUAL IMPAIRMENT 8
Definitions 8
Incidence of Impairment 8
Significance of the Classifications 9
EDUCATING THE VISUALLY IMPAIRED: THE CO-OPERATIVE PROCESS 12
QUESTIONS TEACHERS ASK 16
TEACHER'S GUIDE TO VISUAL DYSFUNCTIONS 20
THE PARTIALLY SIGHTED: PRIMARY AND JUNIOR DIVISIONS 26
Introduction 26
General Suggestions for Teachers of Partially Sighted Students 26
Curriculum Suggestions 28
Visual Efficiency 30
Illumination 31
THE BLIND: PRIMARY AND JUNIOR DIVISIONS 34
Introduction 34
General Suggestions for Teachers of Blind Students 34
Curriculum Suggestions 35
PARTIALLY SIGHTED AND BLIND STUDENTS:
INTERMEDIATE AND SENIOR DIVISIONS 40
Introduction and General Suggestions 40
Curriculum Suggestions 41
Guidance 44
THE MULTIHANDICAPPED PARTIALLY SIGHTED AND BLIND 48
Introduction and General Suggestions 48
Specific Suggestions for Educational Programming 50
ESSENTIAL SKILLS FOR THE VISUALLY IMPAIRED 56
Listening Skills 56
Orientation and Mobility 59
Life Skills 62
SIGHT-ENHANCEMENT AND SIGHT-SUBSTITUTION AIDS FOR THE
PARTIALLY SIGHTED AND BLIND 66
ASSESSMENT AND EVALUATION 70
Medical Assessment 70
Assessment of Visual Functioning 71
Evaluation of Student Achievement 71
Program Evaluation 72
APPENDIXES 74
A: Sample Assessment Forms 74
B: Provincial Services and Programs 86
C: Resources 89
ACKNOWLEDGEMENTS 93

INTRODUCTION

A little blind girl once described a room as a place with "plug-ins" all around the edges. These were what her hands encountered as she walked around the walls, tactually exploring her environment.

This description illustrates how blind and partially sighted people gather their information in fragments. Taking in their surroundings at a glance is not possible for the visually impaired, and this inability to conceptualize the environment as a unified whole has important implications for teaching and learning. Teachers charged with the responsibility of educating these students will need to understand what the various kinds of visual impairments are, how they affect learning, what compensations can be made, and what resources can be tapped to facilitate learning.

This document is designed to meet those special needs of teachers. It is a revision of the 1978 support document *Vision*, which was one of a series dealing with exceptional pupils in the Primary and Junior Divisions. A substantial amount of new material has been added, and the scope of the document has been extended to include visually impaired students in the Intermediate and Senior Divisions and the visually impaired multihandicapped. This document presents information and suggestions that will assist teachers in adapting the content and strategies of *The Formative Years*[1] and *Ontario Schools, Intermediate and Senior Divisions* (OSIS)[2] to the needs of students who are partially sighted or blind.

More programs than ever before are being developed for blind, partially sighted, and multihandicapped students. This document reflects the spirit of sharing that enables professionals to form a network of educational services for visually impaired students in Ontario.

This document is designed to assist teachers in their efforts to offer optimum educational opportunities to students whose visual impairment requires special consideration in school. Introductory material describes the range of visually impaired students and the co-operative process recommended for the planning and implementation of their education programs. "Questions Teachers Ask" addresses some of the common concerns expressed by teachers with visually impaired students in their classrooms. The "Teacher's Guide to Visual Dysfunctions" offers definitions of terms and suggestions that teachers may find useful.

Separate colour-coded sections offer general and specific curriculum suggestions for teachers of partially sighted and blind students in the Primary and Junior Divisions. Partially sighted and blind students in the Intermediate and Senior Divisions are treated together, followed by a section on the multihandicapped visually impaired.

"Essential Skills for the Visually Impaired" covers three areas of utmost importance for these students: listening skills, orientation and mobility, and life skills. This is followed by a section on sight-enhancement and sight-substitution aids for both the partially sighted and the blind. "Assessment and Evaluation" offers guidance on the different types of medical and educational assessment necessary to ensure that the student's program be tailored to his or her needs. Appendix A provides samples of relevant assessment forms.

The remaining appendixes provide further information on specific resources and list books, audio-visual materials, and resource agencies and support groups that teachers of the visually impaired may find useful.

1. Ministry of Education, Ontario. *The Formative Years: Provincial Curriculum Policy for the Primary and Junior Divisions of the Public and Separate Schools of Ontario* (Toronto: Ministry of Education, Ontario, 1975).
2. Ministry of Education, Ontario, *Ontario Schools, Intermediate and Senior Divisions (Grades 7-12/OACS): Program and Diploma Requirements* (Toronto: Ministry of Education, Ontario, 1984).

5

CLASSIFICATIONS OF VISUAL IMPAIRMENT

CLASSIFICATIONS OF VISUAL IMPAIRMENT

DEFINITIONS

Visually Impaired

Visually impaired students are those with a total or partial visual impairment that, even with correction, requires specialized teaching methods. The term *visually impaired* refers to both the blind and the partially sighted.

Partially Sighted

Individuals are considered partially sighted if they have reduced visual acuity (near or distance) or visual field loss that cannot be corrected medically, surgically, or through the use of ordinary eyeglasses and that interferes with their performance of common age-appropriate tasks. These students require intervention if they are to make optimum use of the educational system. Although the legal definition of partial sight is an acuity of 6/21 metres or 20/70 feet,[3] a student whose acuity is greater than 6/21 (20/70) but who is experiencing functional visual problems will not be excluded from special assistance. Likewise, some students who are legally blind, with a visual acuity of 6/60 metres or 20/200 feet, can see well enough to use print and are therefore considered partially sighted for educational purposes.

A student who has had little or no visual experience may, through one or more means, develop more efficient use of his or her vision and be able to be taught as partially sighted. This increased visual efficiency will create special needs, and special assistance will be required.

Blind

Students are considered blind if their visual loss is so great that they cannot read print and must use braille as their reading medium. This group includes students who are totally blind (i.e., with no ability to distinguish light and dark), those with light perception, and some who are *legally blind*. This last category includes those with a distance acuity of 6/60 metres (20/200 feet) or less in the better eye with correction and those whose visual field is reduced to an angle of twenty degrees or less in the widest diameter. Some legally blind students can see well enough to use print and are therefore considered partially sighted for educational purposes.

Congenitally Blind/Partially Sighted

An individual is congenitally blind or partially sighted if he or she has a visual condition or abnormality that originated during prenatal development and was present at birth.

Adventitiously Blind/Partially Sighted

An individual is adventitiously blind or partially sighted if, after an initial period of normal visual experience, he or she acquired a visual impairment as a result of disease or accident.

Multihandicapped Blind/Partially Sighted

An individual is multihandicapped blind or partially sighted if he or she has one or more disabilities in addition to a visual impairment.

INCIDENCE OF IMPAIRMENT

Approximately 1 in 1000 students is visually impaired. Of these, 80 per cent are print users and 20 per cent are potential braille users. In an average board of 25 000 students, therefore, there may be 18 to 20 visually impaired print users and 4 to 6 potentially braille-using students. Approximately 2 to 4 of these may be multihandicapped.

3. An acuity of 6/21 metres or 20/70 feet means that a person has to stand at a distance of 6 metres or 20 feet in order to be able to see an object that an individual with normal eyes can see with the same degree of clarity at 21 metres or 70 feet.

SIGNIFICANCE OF THE CLASSIFICATIONS

Since there are many variations in the way that individuals respond to a visual disability, it is impossible to predict, on the basis of the disability alone, what special assistance will be needed by any particular student. Two students with the same visual acuity may react in different ways, both socially and educationally. One student may progress with minimal attention to the visual impairment, while another may need a great deal of special assistance. Teachers, therefore, may require assistance in assessing the effect of the student's impairment, evaluating his or her needs, and providing the best means of satisfying those needs.

EDUCATING THE VISUALLY IMPAIRED:
THE CO-OPERATIVE PROCESS

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The contributions of a number of individuals are necessary for the progress of the visually impaired student.

The parents provide the most significant influence and support. Their role is crucial: they are expected to create a safe and healthy environment for their child while encouraging the development of independence and fostering a sense of responsibility.

There should always be an open line of communication between the parents and the school. The participation of parents in meetings and group activities is very important. By sharing information about the student's development and needs, parents and educators together can design and maintain the best possible educational programs. It is the joint responsibility of the parents and the school to make use of resource services in the best interests of the visually impaired student.

Valuable information for parents and educators of visually impaired students is provided by medical personnel and other health professionals, such as ophthalmologists, optometrists, and opticians. An ophthalmologist is a medical doctor who specializes in the diagnosis and treatment of all defects and diseases of the eye. Treatment can include surgery and the prescription of drugs and/or glasses. An optometrist is a licensed, non-medical practitioner who measures refractive errors (irregularities in the size or shape of the eyeball or surface of the cornea) and eye muscle imbalances. Optometrists prescribe and fit glasses. Opticians grind lenses to fill prescriptions, fit the lenses into frames, and adjust the frames to the wearer.

The range of educational personnel involved with the visually impaired student is shown in the accompanying chart. The suggested roles and responsibilities are presented only as a guide and may vary according to the student's needs and the special education programs available. No one person can meet all the needs of a visually impaired student. The program is interactive, and its success depends on effective communication and co-operation between all persons concerned.

The Co-operative Process

RESPONSIBILITIES	CLASSROOM TEACHER	RESOURCE TEACHER (SPECIALIST/ CONSULTANT)	TEACHER AIDE	BRAILLIST	ORIENTATION AND MOBILITY INSTRUCTOR	PARENTS	PRINCIPAL
1. Design and implementation of the student's program (content and procedure)	●	●					●
2. Implementation of adaptations to the regular classroom program	●	●					●
3. Documentation of the student's progress	●	●				●	●
4. Selection and provision of special materials, aids, and texts		●					●
5. Organization of and participation in meetings and interviews	●	●				●	●
6. Direct teaching	●	●				●	
7. Assistance with special materials	●	●	●				●
8. Assistance in special subject areas	●	●	●				●
9. Continual communication with the student's home/school	●	●	●		●	●	●

RESPONSIBILITIES	CLASSROOM TEACHER	RESOURCE TEACHER (SPECIALIST/ CONSULTANT)	TEACHER AIDE	BRAILLIST	ORIENTATION AND MOBILITY INSTRUCTOR	PARENTS	PRINCIPAL
10. Arrangement of safe travel to and from school		●				●	●
11. Preparation of class assignments in braille and interlineations of the student's work		●		●		●	
12. Maintenance of up-to-date medical files, including a recent ophthalmic report		●				●	●
13. Introduction of orientation and mobility readiness skills	●	●			●	●	
14. Formal orientation and mobility instruction					●		
15. Development of life skills	●	●	●			●	

QUESTIONS TEACHERS ASK

QUESTIONS TEACHERS ASK

Teachers often express concern about their ability to meet the needs of the visually impaired students in their classrooms. The questions that follow reflect some of their specific concerns, and the answers offer suggestions for fulfilling the students' needs and handling some of the particular situations that may arise.[4]

1. *Should this student be sent to a special school?*
   The exceptionality and the appropriate placement of pupils are determined by an Identification, Placement, and Review Committee (IPRC), which also develops a statement of the needs of each student considered.

   There are several placement options open to the committee. Regular or special classes within the school board's educational system may be the most suitable option. With the help of the board's support services and/or Provincial Resources Services, local schools and teachers may be able to provide all the materials and assistance that the visually impaired student needs. If, however, the IPRC feels that the pupil's needs would be better served in the setting of a residential school, it can recommend and advise parents on placement at the W. Ross Macdonald School.

   The most desirable environment is the one that can best serve the needs of the student at his or her current stage of development. It is important that parents and educators investigate all the alternatives before deciding on educational placement. After a decision has been made, its appropriateness should be reviewed regularly.

2. *Can I instruct a visually impaired student? What resources are available to help me?*
   Since the basic processes of teaching and learning are the same regardless of the student's circumstances, teachers of the sighted can, with the support of a qualified specialist teacher of the blind, adapt their programs so that the visually impaired student is included in all learning activities. School board special services, Provincial Resource Services, and community resources and agencies can provide further support. More information on these services is provided in the appendixes.

3. *Will I need to rearrange my classroom to accommodate the visually impaired student?*
   Visually impaired students will learn whatever arrangements exist in their classrooms, so no special changes need to be made. They should be given an initial orientation to the room and told of any changes that occur. The size and extent of their special materials and equipment will mean, however, that visually impaired students will need greater desk space and accessible storage space in the classroom. Valuable equipment will require secure storage.

4. *Are there any subjects visually impaired students cannot take, or any activities in which they cannot participate?*
   Visually impaired students can take part in all subjects and activities, within the limits of up-to-date medical restrictions, provided that any necessary adaptations are made and appropriate safety procedures followed.

5. *What standards of behaviour and performance can I expect from a visually impaired student?*
   A visually impaired student is a member of the class with the same privileges and responsibilities as the other students. The same standard of behaviour should apply to all. Making exceptions for visually impaired students will separate them further from the class and hinder their acceptance by their peers. Provided that any necessary adaptations have been made, the standard of performance required of the sighted students can also be expected of the visually impaired.

6. *How do other students cope with having a visually impaired student in their class?*
   Other students may feel uncertain about how to interact with the visually impaired student. The teacher should help the others to become aware that the visually impaired student is an individual and should be treated as a peer. The teacher can encourage an awareness and understanding of visual disabilities by setting up special projects or introducing library resources. The teacher can also use role playing as a means of dramatizing to the other students what the visually impaired student can or cannot see, what he or she does that is different, who he or she really is, and so forth. This matter-of-fact approach helps the sighted students interact with the visually impaired in a socially acceptable fashion and facilitates the integration process.

4. This section was adapted with permission from Glenda J. Martin and Mollie Hoben, *Supporting Visually Impaired Students in the Mainstream* (Minneapolis: Leadership Training Institute/Special Education, University of Minnesota, 1977).

7. *Why do visually impaired students sometimes rock in their seats, or poke their eyes?*
Lacking a normal visual sense, the student may find this behaviour stimulating, and as a result it may become habitual. By giving him or her something meaningful to do, the teacher may be able to reduce such behaviour. It is important to help the student understand that these habits are not socially acceptable.

8. *Is there any special equipment that can help the visually impaired student?*
There is a great range of special equipment available, including tape recorders, typewriters, talking calculators, magnifiers, reading/writing easels, optical aids, closed-circuit television, and computers. Each student is an individual, however, and the successful use of these aids depends on a number of personal factors, including the nature of the visual impairment and the student's age, personality, and degree of motivation.

Special aids and equipment are discussed in detail on pages 66 to 67.

9. *Should I avoid using television, films, videos, or overhead projectors?*
Visual material need not be avoided. Visually impaired students should be encouraged to be selective listeners and to ask for clarification if they need it. An occasional word of explanation will help them to understand, but a running commentary is not necessary. The student should be given a desk copy, in print or braille, of chalkboard or overhead material.

10. *Can I say "see" or "look"?*
Teachers need not avoid the vocabulary of the sighted world for the sake of the visually impaired student. He or she will use the same words as others do, fitting the meaning to his or her particular circumstances.

11. *Do all blind students require braille?*
No. Although some read braille, others read print and some read both. For a variety of reasons, some are unable to read either.

12. *How can a blind student read print?*
Obviously, totally blind individuals cannot read print, but some who are identified as legally blind may nevertheless have sufficient vision to do so.

13. *Why do partially sighted students need to use braille? Why do some partially sighted students use both braille and print?*
The partially sighted category encompasses such a wide range of visual ability that some partially sighted students may require braille for the act of reading, while others may not. Some visual conditions can vary enough from day to day that the student finds it beneficial to alternate between braille and print.

14. *How will the visually impaired student get to and from school?*
Prior to the school starting date, parents and school personnel should discuss travel arrangements. Good communication should exist between parents and school to ensure that the student is travelling to and from school safely.

15. *Will the student need a guide?*
Visually impaired students need to learn the layout of the school, playground, and so forth. They should be encouraged to make a mental map, which will allow them to become independent travellers. Guides and/or buddies are appropriate in certain situations (such as when the class is doing a science experiment or going on a field trip) and may be needed to assist a newly blinded student.

16. *What provisions are made for visually impaired students in the event of a fire drill?*
Each school should develop a policy to ensure the safety of its visually impaired students. It is recommended that a staff member and an alternate be appointed for each visually impaired student, to take responsibility for the safe evacuation of that student.

17. *How do I become a specialist teacher of the blind?*
Teachers holding an Ontario Teacher's Certificate or its equivalent are eligible for admission to the additional qualification course offered by the Faculty of Education of the University of Western Ontario. The course aims to train already qualified teachers to become specialist teachers of blind and visually impaired students. It is a three-session, three-summer course, taught during the month of July at the W. Ross Macdonald School in Brantford, Ontario. Participants may stay in residence. Graduates of this course may be hired to teach in local school boards or hired by the Ontario Ministry of Education to teach at the W. Ross Macdonald School.

The same course, or its equivalent, is required for French-language teachers who wish to become specialist teachers of the blind.

For more information about the course, contact:

The Faculty of Education
University of Western Ontario
Althouse College
1137 Western Road
London, Ontario
N6G 1G7
Telephone: (519) 679-3292

TEACHER'S GUIDE TO VISUAL DYSFUNCTIONS

The chart that follows provides brief definitions of visual dysfunctions, a short selection of possible effects, and suggestions for teachers.

Some of the measures suggested to help visually impaired students adapt to the classroom will require the co-operation of parents, teachers, and medical personnel.

DYSFUNCTION	POSSIBLE EFFECTS	SUGGESTIONS
Albinism: hereditary lack of pigment (partial or complete) in the iris	- lowered visual acuity - light sensitivity - nystagmus (involuntary eye movement) - refractive errors - variable visual fields	- reduce glare - minimize illumination - investigate the use of prescription lenses (usually tinted) - experiment with optical aids and print size - vary length of near-vision assignments
Aniridia: congenital absence or underdevelopment of the iris	- decreased acuity - photophobia (extreme light sensitivity) - nystagmus (involuntary eye movement) - underdeveloped retina, cataracts, displaced lens	- provide dim illumination - investigate the use of sunglasses for bright light - reduce glare - provide pictures and print with good contrast
Astigmatism: refractive error due to imperfect curvature of the cornea	- light rays focused separately on the retina rather than at a single point - images blurred and distorted - generally poor visual discrimination	- investigate the use of corrective lenses - provide good illumination - prevent fatigue by limiting near-vision assignments
Cataracts: opacity or cloudiness in the lens	- distortion or blockage of light rays before they reach the retina - loss of visual acuity - blurred vision - squint - photophobia (extreme light sensitivity) if lens is removed - blank areas in visual picture	- experiment to discover most comfortable level, position, and direction of illumination (light from behind is often most appropriate) - provide means of bringing near-vision work close to the eyes (a tilt-top desk may be useful) - experiment with magnification - for student whose lenses have been surgically removed, see that help is provided for adjustment to cataract spectacles or contact lenses - after cataract surgery, watch for light sensitivity and problems with glare - provide adjustable lamps for surface illumination

DYSFUNCTION	POSSIBLE EFFECTS	SUGGESTIONS
Central vision loss:		
reduction or absence of vision in centre of visual field	- vision limited to peripheral area	- provide mobility assistance - encourage the student to tilt, raise, or lower his or her head to read
Colour deficiency:		
inability or diminished ability to perceive differences in colour	- problems usually with red or green, rarely with blue or yellow	- avoid colour-coded directions - watch for light sensitivity - arrange tests to determine extent of deficiency
Glaucoma:		
increased intra-ocular pressure due to accumulation of fluid in front portion of the eye	- pain, headaches, general discomfort - constriction of visual field - poor visual acuity - sensitivity of the eye to light or any external pressure	- consult with the student's eye specialist regarding treatment - see that regular medical attention is sought and provided - watch for and report changes in visual performance - minimize glare - encourage responsibility for medication if prescribed
Hyperopia (far-sightedness):		
because of abnormal shortness of the eyeball, point of focus for light rays falls behind the retina	- poor near vision - difficulty in reading - student's shadow may obscure working area	- see that corrective convex lenses are obtained if needed - encourage the use of glasses at all times - allow the student to read close to the page if necessary - provide assistance with near-vision work - try shining light directly onto working surface
Macular degeneration:		
changes in the area of the retina responsible for detail vision	- loss of central vision - deterioration of colour vision - photophobia (extreme light sensitivity) - inability to discriminate fine detail - absence of part of the visual picture	- allow student to assume the posture necessary for optimum vision - arrange for mobility training if needed - arrange for braille training if needed - teach student to move the head to see whole pictures or words

DYSFUNCTION	POSSIBLE EFFECTS	SUGGESTIONS
Microphthalmos:		
congenital abnormally small eyeball	- near-sightedness - other abnormalities within the eyeball	- use techniques for low vision dictated by the severity of the visual loss - arrange for braille training if needed
Monocular vision:		
vision in only one eye	- reduced efficiency in depth perception - limited visual field	- expect the student to function normally unless visual functioning in the remaining eye is affected - take sensible measures for the safety of the remaining eye
Myopia (near-sightedness):		
because of abnormal length of the eyeball, image falls in front of the retina	- poor distance vision	- see that corrective concave lenses are obtained if needed - help develop gross-motor skills and encourage sports activities - make accommodations if using the chalkboard - if the student can read, develop reading and other close work as areas of strength
Nystagmus:		
involuntary movement of the eyeball	- difficulty in focusing and fixation	- allow student to assume the body position necessary for optimum vision - allow finger pointing or markers so that the student can keep his or her place on the line or page - provide pictures and print with good contrast

DYSFUNCTION	POSSIBLE EFFECTS	SUGGESTIONS
Optic atrophy:		
loss of function of the nerve tissue that carries messages from the retina to the brain	- restriction of field of vision - inconsistent visual behaviour - irreversible degeneration of nerve fibres	- capitalize on times when performance is good - provide remedial assistance in concept development if necessary - introduce visual efficiency activities (see page 30) - discuss signs of reduced visual functioning with medical personnel, parents, and specialist teachers - provide increased illumination and magnification
Retinal detachment:		
separation of the retina from the choroid	- appearance of flashing lights - visual field loss - defects in colour vision - decreasing visual acuity leading to blindness	- provide good illumination - provide optical aids (see pages 66-67) - provide braille and tactile training if necessary - check with parents and/or medical personnel to determine extent of physical activity allowed
Retinitis pigmentosa:		
pigment deposits in the retina	- gradual loss of peripheral field, possibly resulting in tunnel vision - difficult functioning in dim light - progressive worsening	- provide good illumination - seat student near back of the room to provide larger visual field - provide optical aids (see pages 66-67)
Retinoblastoma:		
malignant intra-ocular tumor	- enucleation (surgical removal of the eyeball) and prosthesis	- provide braille and tactile training if necessary
Retrolental fibroplasia:		
impairment produced by high-oxygen therapy in low-birth-weight babies	- decreased visual acuity or blindness - scarring - retinal detachment	- provide optical aids and/or illumination devices (see pages 31 and 66-67) - provide tactile training if necessary

DYSFUNCTION	POSSIBLE EFFECTS	SUGGESTIONS
Rubella-related conditions:		
visual dysfunctions caused by virus transmitted to the foetus during pregnancy	- congenital glaucoma or cataracts - decreased acuity - constriction of visual field - additional disabilities, e.g., deafness, heart murmur	- provide optical aids (see pages 66-67)
Strabismus:		
imbalance of the eye muscles	- crossed eyes - failure of eyes to focus on the same object - takeover of task of seeing by one eye, causing the other eye to become inoperative ("lazy eye") - loss of vision in one eye, reducing efficiency in depth perception and visual field	- discuss observations with parents so that early medical intervention can take place
Tunnel vision:		
reduction of the visual field	- limitation of field to the area directly in front of the eyes, giving the person the sense of looking through a narrow tunnel	- provide mobility instruction - provide concept development (to counteract fragmentation of environmental information)

THE PARTIALLY SIGHTED: PRIMARY AND JUNIOR DIVISIONS

THE PARTIALLY SIGHTED: PRIMARY AND JUNIOR DIVISIONS

INTRODUCTION

Partially sighted students – as a group – exhibit a wide range of visual impairments. These students do not fit neatly into any category, and as a result they can have greater educational and emotional adjustment problems than their peers. They are neither sighted nor blind; preconceived notions of what they can see can be misleading. A student's difficulties with certain visual tasks can lead teachers to underestimate his or her visual capability in other contexts. Likewise, a good performance in one area of visual functioning can create false expectations in other areas. Special attention should therefore be given to determining the student's needs; educational programs must then be carefully tailored to each individual's requirements.

This section provides information on partially sighted students in the Primary and Junior Divisions. It outlines general suggestions for regular and special teachers charged with the responsibility of providing these students with appropriate educational opportunities. It offers specific curriculum suggestions, so that partially sighted students can be provided with the same opportunities as other students in Ontario, as outlined in *The Formative Years*. The special skill of visual efficiency that partially sighted children need to be taught and the conditions of illumination that need to be provided are also discussed in this section.

GENERAL SUGGESTIONS FOR TEACHERS OF PARTIALLY SIGHTED STUDENTS

- Teachers should concentrate on visual learning if the student has some useful vision, but they should also use multisensory experiences to increase the sensitivity and usefulness of the other senses. Concrete materials should be provided consistently.

- Learning through incidental observation is difficult for students with impaired vision, since the eyes are normally a major transmitter of environmental data. Teachers, therefore, should recognize that the ability of these students to confirm the validity of verbal statements about the world will consequently be limited.

- The partially sighted individual has gaps in his or her experiential background. Teachers should try to provide experiences that the student can relate to, using his or her other senses.

- Teachers should plan lessons well in advance, so that resource staff have the time to tape, type, braille, or otherwise prepare material for each partially sighted student.

- Each student's visual impairment should be kept in mind when classroom seating is being arranged. The teacher should seat each student so that chalkboard work and demonstrations are as visible as possible. The student may be the best judge of where he or she should sit.

- An enclosed classroom is normally more suitable for partially sighted students than an open-concept room, which tends to create a sensory overload.

- Illumination suitable to the student's visual needs is essential; glare should be avoided, and good-quality light provided.

- Sufficient desk-top and shelf space should be provided for special materials; adjustable tilt-top desks or reading stands can be supplied if needed.

- Partially sighted students should be allowed to experiment: decisions about lighting, the size and/or colour of pens, pencils, paper, chalk, and print, and other features of learning materials and the environment should be made by the students themselves with the assistance of resource personnel.

- Teachers should use paper that provides the best contrast, taking into account the nature of the individual's visual condition. Certain colours may yield better results. Bold-lined paper, with varying amounts of space between the lines, may also be helpful.

- A more conscious effort is required of students who have only partial sight if they are to function with their peers in a regular class. To help reduce the fatigue that this extra effort produces, teachers should:
  - change the focus or provide physical activity breaks during periods of close eye work;
  - have another student copy notes from the chalkboard using "no carbon required" (NCR) paper, or provide a photocopy of legible notes;
  - ensure that the student's glasses are clean and that they are worn when they should be;
  - avoid having a student do detailed copying;
  - make sure that duplicated sheets are clear, well spaced, and high in contrast;
  - avoid using copies made from spirit masters.
- Teachers should read aloud what is written on the chalkboard, to clarify the information and assist the student in taking notes.
- Desk copies of chalkboard materials and overheads can also facilitate note taking for partially sighted students.
- A variety of written work should be assigned, in small amounts.
- Teachers should stress to students the benefits of keeping their notes, lockers, and desks organized.
- The partially sighted student should not necessarily be expected to complete the same volume of work as his or her sighted peers.
- Additional time must be allowed for the partially sighted student to manipulate materials and equipment. Teachers must also consider time when planning homework, assignments, and tests. Time-and-a-half may be required for the completion of tests and examinations.
- Written tests should be read to a student if necessary. All or parts of a test can be taped. The method of measuring the student's understanding of content can be modified to suit the student's circumstances.
- Some form of personal contact, such as a gentle touch, should be used to aid communication.
- If necessary, the partially sighted student should be allowed to take the teacher's arm when being guided.
- Partially sighted students should be instructed to face the person with whom they are communicating.
- Facial expressions and gestures should be taught. Good posture should be emphasized.
- Freedom of movement and exploration should be encouraged.
- Partially sighted students should be taught how to request assistance and when and how to express thanks for help.
- Teachers should be alert to the need for orientation and mobility training.

CURRICULUM SUGGESTIONS

Mathematics

- A grasp of basic concepts cannot be assumed. The teacher must make sure that the fundamentals are understood. Partially sighted students must physically manipulate concrete materials in order to master these concepts.
- A box with compartments should be provided so that the student has a place in which to put articles used for counting and matching.
- Each student should proceed from recognizing numbers in a three-dimensional, tactile form to recognizing them in written form.
- Seatwork should be assigned so that students learn to work without direct supervision. Worksheets that use pictorial directions are helpful. So are magnetic boards.
- A student can miss a step in a chalkboard presentation because of his or her limited vision. Each step in the presentation should be explained while the student follows from an identical copy provided by the teacher.
- The chalkboard should be used if partially sighted students need practice drills. Sighted students should participate in these drills too so that the partially sighted student does not feel singled out.
- Instruments for measuring should be demonstrated to partially sighted students individually.
- Black-lined graph paper or lined paper prepared by the teacher will assist a student to arrange columns.
- Graph work and worksheets on fractions should be specially prepared in order to avoid text material that is too small or too complicated.
- In activities involving measurement, the units used should be sufficiently large that the visually impaired student can do the work without assistance.
- Providing worksheets eliminates the possibility of a student's making errors when copying from the chalkboard or mathematics text.
- Real coins should be used when money is introduced.

Reading

- Each student should be directed to look at labelled objects in the room. These should be at the child's eye level.
- The student should be encouraged to look carefully at pictures in order to gain information. Details should be pointed out.
- If a student has difficulty in focusing, "peep cards" or line guides can be useful aids. Peep cards are made of construction paper with a rectangular hole large enough to permit an entire line of print to be viewed at one time.
- Adjustable reading stands can promote good reading posture and reduce neck and back fatigue.
- Depending on the student's eye condition, he or she may need to sit in a particular place in the classroom in order to see the chalkboard.
- During a directed reading activity, the partially sighted student should be close to the teacher.
- The phonetic approach to word recognition may be used.
- Emphasis should be placed on vocabulary building, word-attack skills, comprehension, and sequence, rather than speed. Some partially sighted students will have difficulty developing speed in reading.
- Large print is not appropriate for all partially sighted students. If the student sees a blurred image (as with cataracts), larger print produces only a larger blur. Dependence on large print can also limit the student, since there are fewer materials available. Sometimes normal print held close to the eyes is the most legible, while in other cases smaller, bold print is best. No particular size or form of type has been found to be suitable for all partially sighted students, and some may use a combination of print formats. Resource personnel will help the classroom teacher to determine the most appropriate medium for the student.
- Very close reading will not damage the eyes.
- The development of good listening skills is essential (see pages 56-58).

Writing

- Visually impaired students need a structured writing program, which teaches one letter at a time and emphasizes correct directionality, shape, and formation.
- It is helpful to demonstrate points at the chalkboard to each student individually.
- It is advisable for a student to practise letter formation at the chalkboard under the teacher's supervision.
- Paper that has well-spaced, bold black lines is useful. Sheets of this can be made by stencilling or photocopying.
- Spacing difficulties can be eliminated if the student uses his or her index finger as a spacer between words.
- Each partially sighted student should have a written example of the alphabet on his or her desk.
- The connective technique in cursive writing helps the student to begin letters on the line.
- Students should be given time to practise reading their own handwriting.
- Legibility is more important than the size or slant of the letters.
- Fine-motor skills are a prerequisite for typing. Strengthening activities for the fingers, hands, and wrists should be introduced.
- Typing can be introduced when the student reaches Grade 4 or 5 if he or she has adequate muscle control and co-ordination. It provides a less fatiguing form of communication, and the output is often easier to read than the student's writing.
- A one-to-one oral session with the student several times a week provides a good introduction to keyboard skills. Once these skills have been learned, composition at the typewriter should be encouraged.

Spelling

- Particular attention should be paid to basic vocabulary.
- Spelling lessons should include comprehension of the meanings of the words.
- Oral drills should be used to improve the student's spelling.
- Typing drills are also an effective means of spelling practice.

Music

- When written music is used, a larger format and darker staff lines may be necessary.
- Partially sighted students should be encouraged to participate in choral and instrumental music.
- The individual growth of children who show an interest in and/or talent for music can be encouraged by allowing them to sing and/or to play or examine such instruments as the piano, violin, recorder, drums, and classroom instruments.
- To develop the students' appreciation of music, the teacher should make available a wide variety of musical recordings.

Visual Arts

- Students who have only partial sight need a variety of experiences in visual arts. They should be encouraged to attempt the same activities as other students. Skills such as cutting and pasting should be individually taught.
- The work of partially sighted students should be valued for the effort they put into it and for the enjoyment it gives them. It is the process that is important, not the product.
- Clay and paper sculpture, textile arts, three-dimensional forms, finger painting, paper tearing, and collage are art forms and activities that partially sighted students can enjoy.

Physical Education

- Within the limits of the eye specialists' recommendations, most activities of the school's physical education program are desirable – even necessary – for partially sighted students. It is important that they be encouraged to participate.
- Partially sighted students should be included in demonstrations and teamed with others who have mastered the skills involved.
- Even if a student cannot see well enough to participate in certain games or sports, he or she should be involved in learning the rules and the relevant skills.
- Swimming, track, gymnastics, dance, physical fitness, and individual sports are excellent activities for most students.

Environmental Studies

- Models or concrete objects should be used to develop concepts.
- Diagrams must be simple and large and have good colour contrast. Any print on a diagram must also be large. Each diagram should present only one or two concepts.
- For map work, students can use black-and-white desk copies of overhead transparencies. Essays may replace close map work.
- The detailed copying of maps by students should be avoided.
- A series of maps, each containing one or two concepts, is far more effective than one map with a great deal of information.
- Colour coding of questions or instructions should be avoided, as it can create problems for some students.
- The partially sighted student should be prepared before a field trip, so that he or she will know what to expect. If possible, the student should be positioned up close so that he or she can see the activities taking place. Follow-up sessions after the trip can help to ensure that the students have understood the ideas or experiences they have been exposed to and can apply them creatively in other contexts.

VISUAL EFFICIENCY

The skill of seeing must be taught: teaching partially sighted students how to look will not change their visual acuity, but it may help them to use their vision more efficiently. Visual efficiency is a combination of acuity and perception and can be improved through instruction. It is this visual efficiency, rather than visual acuity, that should concern the classroom teacher. He or she can undertake visual efficiency training under the direction of a qualified specialist teacher of the blind. Where no specialist teacher is available, assistance may be obtained from Provincial Resource Services (see Appendix B). An extremely useful source of information is Barraga and Morris's *Program to Develop Efficiency in Visual Functioning*.[5]

The aims of a visual efficiency program are the development of consistent maximum visual functioning and the transfer of visual skills to the classroom. The student in a visual efficiency program learns (in approximately the sequence shown):

- to use spatial concepts and vocabulary;
- to discriminate by tactile means (in attending to a visual task);
- to discriminate visually according to size and colour and to order sequentially;
- to match and sort;
- to focus attention on and respond to visual stimuli;
- to discriminate shades of colour;
- to discriminate and recognize geometric forms;
- to visually organize the whole from separate parts;
- to recognize pictures;
- to discriminate among and recognize black-outline drawings of animals and household objects;
- to trace or copy accurately;
- to see similarities in, and differences between, the inner details and shapes of similar objects;
- to recognize objects in the foreground and in the background;
- to discriminate symbols;
- to discriminate letters and words;
- to track visually;
- to use visual memory.

Teachers can supplement the visual efficiency program by:

- providing a wide variety of materials for tactile and visual discrimination;
- teaching students to trace the outlines of forms with their fingers;
- using a computer or flash cards for quick drills after the student has learned each skill;
- preparing worksheets or readiness books so that students can practise their new skills independently.

5. Natalie C. Barraga and Jane E. Morris, *Program to Develop Efficiency in Visual Functioning* (Louisville, Ky.: American Printing House for the Blind, 1982).

Career Counselling

Experience has shown that visually impaired students can obtain many of the same jobs as sighted people. Students with good orientation and mobility skills and well-developed social skills and organizational abilities are more likely to be accepted in the workplace.

Like other students, the visually impaired need to exercise good judgement in choosing and preparing for a career. Vocational or occupational training may in some cases be more suitable than university programs. Realistic expectations in accordance with the students' interests and abilities should be encouraged. As many options as possible should be left open.

ILLUMINATION

Optimum lighting conditions for visual functioning will vary, depending on the nature of the visual condition and the type of task being performed. Natural, artificial, day, and night lighting present different functional problems and require different solutions for each student. In order to determine what is best for themselves, students must experiment with lighting conditions, with the teacher's assistance. The individual is the best judge of his or her requirements.

Indoors, too little or too much light may reduce the student's visual efficiency. With some eye conditions, dim light may be preferable. The light on the task at hand should be more intense than the light in the surrounding environment. While light projected from behind can increase visibility, light projected from the side or the front will prevent problems with shadows. Caution is required, however, because light falling directly into the eyes causes glare and results in reduced visibility and visual fatigue. The light should be projected from above the level of the eyes so that it will be distributed equally from all angles, without reflecting back into the face. Some students find that an incandescent light produces less glare than a fluorescent one.

Shiny desk tops and glossy paper reflect light and should be avoided. Placing a black or dark matte paper on the desk or table top will help to minimize glare. Matte paper is recommended for written work.

Chalk dust can create a "whiteout" effect, obscuring the information on the chalkboard. Regular use of a chamois will reduce this dust and may thereby increase the student's ability to read from the board. Coloured chalk should be avoided, as it provides too little contrast.

The teacher can increase the amount of information available to a student by maximizing contrast. Sharp contrasts are essential in reading, writing, drawing, cutting, and pasting. Tasks involving black or dark objects or materials will require higher light levels in the surrounding area; a buff- or cream-coloured piece of construction paper on the table top will provide a good background. Conversely, a task involving light or white objects or materials can benefit from a dark background. Black on white provides the greatest contrast, but *intense* blue, green, or purple ink on a buff or light yellow background may be preferable if glare is a problem.

Partially sighted students can be extremely light sensitive. They should be seated so that they are not facing a window or staring directly at a light source. The teacher should avoid standing in front of a window while teaching.

If the furniture, walls, and floors in a room are in contrasting colours, the partially sighted student can locate specific areas more easily. Stairs may need to be sharply outlined by means of a dark or light strip placed along the front edge of each riser.

Aids to control illumination indoors include occluders, to improve contrast and block glare; visors, to control light intensity and glare; absorptive lenses and filters; and incandescent lamps. Incandescent lamps emphasize the yellow-red end of the spectrum and have reflector shades and spring arms to help reduce glare and/or increase lighting levels. High-intensity lamps may also be useful.

Weather conditions, the position of the sun, and the time of day will affect visual performance and mobility outdoors. The ability to locate bus signs, stairs, curbs, potholes, and traffic lights will vary depending on the outdoor light levels and on the eye condition of the individual. Visors or wide-brimmed hats can control light intensity, and absorptive lenses and filters can minimize glare and reflection.

Optimum lighting conditions, both indoor and outdoor, should be determined for each individual, and adjustments that will improve visibility should be made wherever possible.

THE BLIND:
PRIMARY AND JUNIOR DIVISIONS

THE BLIND:
PRIMARY AND JUNIOR DIVISIONS

INTRODUCTION

A blind person's explorations and experiences of the physical world are fragmented and limited to what the hands and arms can embrace. It is vital to compensate for this deprivation by providing a blind student with a wide variety of concrete experiences. The student should learn to relate to and interact with the environment and to engage in as many independent activities as possible.

For the blind student, encouragement and support from the classroom teacher and from resource personnel are essential. It is almost impossible for a blind student to function in the school program without regular support from a specially trained teacher provided by the local school board, a neighbouring school board, or Provincial Resource Services (see Appendix B).

This section provides information on blind students in the Primary and Junior Divisions. It outlines general suggestions and specific curriculum suggestions for classroom teachers charged with the responsibility of providing these students with appropriate educational opportunities.

GENERAL SUGGESTIONS FOR TEACHERS OF BLIND STUDENTS

- Most blind students respond best to firm, consistent discipline. Sympathy and pity must be replaced by understanding.
- Nothing should be taken for granted: concept development, orientation and mobility, life skills, and communication skills all need to be taught.
- A structured program and consistent intervention by the teacher are necessary if blind students are to learn.
- Ideally, a beginning braille user should have the services of a specialist teacher of the blind for half the school day.
- To avoid fragmentation and to minimize gaps in knowledge, teachers should try to present holistic ideas to blind students.
- A specific objective of lessons should be the efficient use of the remaining senses of touch, hearing, smell, and taste.
- Teachers should try to involve the student in a wide range of physical and sensory experiences, including kinaesthetic activity.
- Freedom of movement and exploration should be emphasized.
- Students should be taught how to make careful and complete tactile examinations. This is especially important for the recently blinded. Concrete materials should be provided consistently.
- Teachers should take care not to convey visual concepts verbally to a blind student. They should avoid describing things that blind students can discover for themselves, with direction: instead of simply describing a car, for example, the teacher should have the children examine entire cars by touch.
- Teachers must make sure that sufficient realistic information is given to blind students to allow them to separate fact from fantasy. In *Snow White and the Seven Dwarfs*, for example, the wicked queen speaks to the mirror and the mirror replies. It must be pointed out to blind students that mirrors do not speak.
- Young blind children may need to be taught how to play with toys and equipment.
- Some form of personal contact such as a gentle touch should be used to aid communication with blind students.
- Teachers should avoid pushing or pulling a student into place. When guiding a small child, the sighted person can hold the child's hand. A taller student should take the arm of the sighted guide. Blind students should be encouraged to tell sighted individuals how to guide.
- In the presence of blind students, names should always be used so that students will know who is being addressed.
- Teachers should inform blind students when they are leaving them.
- Some blind students develop habits such as rocking or eye poking. These mannerisms should not be ignored. By giving a student something meaningful to do, the teacher will often be able to reduce this behaviour. It is important to help the student to understand that these habits are not socially acceptable. It may be necessary to use a more structured approach in order to help the child to overcome these habits.

- Efficient and acceptable ways of eating, dressing, and grooming should be taught as required.
- Blind students should be instructed to face the person with whom they are communicating.
- Facial expressions and gestures should be taught. Good posture should be emphasized.
- Blind students will need to learn the proper way to request assistance and when and how to express thanks for help.
- Teachers should read aloud what has been or is being written on the chalkboard.
- Teachers should plan lessons well in advance, so that resource personnel have the time to tape, type, braille, or otherwise prepare material for each blind student.
- Organization of the blind student's notes, locker, and desk should be stressed. Keeping these things organized should become the student's responsibility.
- Additional time must be allowed for the blind student to manipulate materials and equipment. Teachers must also consider time when planning homework, assignments, and tests. Time-and-a-half may be required for tests and examinations.
- Written tests may be read to a student if necessary.
- Sufficient desk-top and shelf space should be provided for special materials.

CURRICULUM SUGGESTIONS

Mathematics

- Teachers should give particular attention to one-to-one correspondence and the grouping of concrete items, because blind students lack the visual experience that forms numerical concepts.
- Each of the basic concepts of addition, subtraction, multiplication, and division should be thoroughly understood before being practised on the abacus or talking calculator.
- A student's own body can be used to help him or her to conceptualize numbers.
- Rhythmic clapping of number patterns is a helpful exercise.
- Mental arithmetic is a valuable skill for blind students. Teachers should allow time for the recall of basic number facts.
- Repeated experiences reinforce skill development. Blind students need repeated exposure to concrete objects that can be easily picked up and do not roll away. Objects can be placed in a box or on a magnetic board.
- Students can count items by moving them from one container to another.

- The Nemeth code is a form of braille notation for mathematics and science. The Nemeth code symbols for new concepts must be taught by the specialist teacher at the same time as these concepts are introduced in the regular class.

- Real coins should be used when money is taught.

- Teachers can make braille clocks easily by substituting braille numbers for the print symbols around the face of a clock. Digital talking watches can also be appropriate teaching aids.

- A metronome can be used to present the idea of seconds.

- Lines on a graph can be raised with a dressmaker's wheel. A rubber mat should be used under the paper when drawing with the wheel.

- Inlaid geometric puzzles are useful for teaching fractions.

- Personal experiences with instruments of measurement, such as a trundle wheel labelled in braille, are necessary for concept development.

Reading

- A readiness program to develop good tactile discrimination is essential. Activities should involve the sorting of concrete items into such classifications as same and different, hard and soft, coarse and fine, and thick and thin. To prepare for braille reading, an understanding of top, bottom, left, and right is essential. A tactile reference such as a pipe cleaner, masking tape, or a braille line of raised dots may be used to orient the student on the page. Each student can practise passing his or her fingers from left to right over rows of raised geometric designs in order to find those that are the same or different. The student's answers to such problems should be given orally.

- The standard reading skills taught to sighted students are needed equally by the blind and must be taught. These include comprehension and structural analysis.

- In the beginning, the whole-word method of teaching braille reading is effective. A strong emphasis on phonics should follow.

- Two-handed reading should be encouraged.

- Whenever possible, stories should be supplemented with real experiences. Abstract terms will require explanation.

- Since reading braille takes longer than reading print, the braille user must be given additional time to complete an assignment.

- Grade 1 braille consists of the alphabet. Grade 2 braille consists of contractions, short forms, and whole words. Because the needs of individual students vary, some will find Grade 1 braille more appropriate than Grade 2. However, since braille books are produced in the Grade 2 code, it is advisable to proceed to the Grade 2 level as soon as possible.

- Because of the complexity of the syllabication and grammar of the French language, the French Grade 2 code contains far more contractions and short forms than its English counterpart. Mastery requires more time and greater maturity on the part of the student. It is therefore recommended that French-speaking students begin by learning French Grade 1 braille. However, French-speaking students should be competent in French Grade 2 contracted braille by the time they have reached Grade 3 or Grade 4, when English is introduced as a second language, so that they can then learn English Grade 2 contracted braille.

- Page numbers in a braille book do not correspond to the page numbers in the print version. Teachers who use print while their students are using braille will find it useful to write the braille page numbers in the print copy.

Writing

- There are several methods of writing braille: the braille writer, the slate and stylus, and electronic braille devices. Primary students begin on the braille writer. Slate skills are introduced once students are proficient in the braille code and have acquired sufficient fine-motor control.

- Once slate-and-stylus skills are automatic and efficient, the slate and stylus may become the most practical writing method because of the portability of the materials.

- Braille users need extra practice in spelling because of the many contractions and short forms of words that they meet in braille. For example, "receive" becomes "rcv" in braille. Spelling lessons must include both the braille form and the printed form. Practice and oral repetition are important, and the use of tapes is helpful.

- Typing can be introduced when the student reaches Grade 4 or 5 if he or she has adequate muscle control and co-ordination. It provides a less fatiguing form of communication.

- A one-to-one oral session with the student several times a week provides a good introduction to keyboard skills. Once these skills have been learned, composition at the typewriter should be encouraged.

- Blind students should be taught to write their signatures, although it is a difficult skill to master. It is better to use cursive signatures from the beginning. Plasticine models of each student's name may be made. Once signatures are learned, they must be practised every day so that the student's skill does not deteriorate.

Music

- Blind students are not necessarily gifted musically, although their developed listening skills are helpful in this subject.

- Many concepts such as fast, slow, high, low, over, and under can be taught through music.

- Great benefit can be derived from creative movement to music and rhythm.

- Full participation in classroom music should be encouraged.

- Where instrumental music programs exist, blind students should be given the opportunity to take part.

- Blind students can benefit from participation in rhythm bands, ensembles, choirs, musical stage productions, and music festivals.

- Braille musical notation should be taught by qualified instructors.

Physical Education

- The involvement of blind students in the physical education program is essential. The development of gross-motor skills is crucial in establishing directionality, laterality, body awareness, self-orientation in space, and overall physical well-being. Most activities are easily adaptable to the blind student's needs.

- Teachers should not be overprotective of blind students.

- Exercises, wrestling, skating, relays, running, field events, swimming, dancing, snowshoeing, and cross-country skiing are some of the sports suitable for the blind.

- If teachers or other students call or clap, the blind student will know in which direction to run or aim. A beeper or bell ball may be useful.

- Full participation in certain games may not be possible, but the rules and scoring systems should be understood by all the students.

- Some blind students may be interested in participating in the Ontario Blind Sports Association. Information is available from:
  1220 Sheppard Avenue East
  Willowdale, Ontario
  M2K 2X1
  Telephone: (416) 495-4163

Visual Arts

- Tactile experience of a work of art can be satisfying if the work has simple lines and definite textures.

- Clay modelling, other three-dimensional arts, and brush and finger painting are valuable activities and give meaning to visual art for the blind.

- A true understanding of colour is impossible for the congenitally blind. These students nevertheless need a colour vocabulary and should be taught the colours of common things ("grey elephants", "white snow", "blue sky", and so forth). An understanding of colour co-ordination is also important for the students' personal appearance.

- Wood, fabric, and paper sculptures and collages are appropriate undertakings for blind students.

- Paper can be placed over a fine screen (such as in a door or window) while the student draws on it with a crayon, creating a palpable image.

- Cutting with scissors is difficult but can be mastered with the assistance of a teacher.

- The work of these students should be valued for the effort they put into it and for the enjoyment it gives them. It is the process that is important, not the product.

Drama

- Participation in plays and dramatic presentations is valuable for the blind. In such activities, they can be trained in everyday gestures and movements that they cannot learn through visual observation.

- A student's role in dramatic work must be fully explained. Teachers may have to give stage directions from the wings.

- A heavy string can be fastened to the floor so that a student can move to a particular spot on stage by walking along the string.

- Teachers should explain staging, properties, lighting, and all other aspects of the production of the play.

Environmental Studies

- The skill of tactile map and diagram reading must be taught.

- Tactile maps can be made from string, pipe cleaners, wool, styrofoam, foil, clay, salt, plaster, plasticine, and sandpaper.

- Maps should be simple and small enough to be encompassed by both hands.

- Tactile maps should give a limited amount of information in order not to confuse the student. Only the most important information should be included on the map. If more details are needed, a series of maps can be used, with additional data on each map.

- Tactile maps and diagrams by themselves cannot convey the same information that visual maps and pictures give to sighted students. Detailed explanations must accompany the display.

- Raised-line diagrams can be used after a student has developed a clear idea of representation.

- A blind student may substitute written explanations for the diagram work done by the other students.

- A student can make science collections (of rocks, insects, or flowers, for example) and sort them into categories by touch.

- Students can benefit from a variety of experiences; visits to various locations will enhance their knowledge and awareness of the environment.

PARTIALLY SIGHTED AND BLIND STUDENTS: INTERMEDIATE AND SENIOR DIVISIONS

PARTIALLY SIGHTED AND BLIND STUDENTS: INTERMEDIATE AND SENIOR DIVISIONS

INTRODUCTION AND GENERAL SUGGESTIONS

Visually impaired students at the secondary level have the same basic needs as blind and partially sighted elementary students (see the relevant sections of this resource guide). In addition, however, secondary students have important needs that are unique to their age group. In particular, the social pressures characteristic of this age group are multiplied for students with limited independence, who may be uncertain about themselves and their place in the world.

The visually impaired student needs to develop a good self-image. The secondary teacher can play a key role in this process by creating for the student a program that is achievement oriented, stressing and challenging the student's particular skills and abilities rather than emphasizing what he or she cannot do. The student must not feel isolated and should have the same responsibilities and privileges as the other members of the class.

The visually impaired student should be strongly encouraged to take part in extracurricular activities. Some areas in which visually impaired students have achieved success include the student council, band, choir, swim team, chess club, school newspaper, wrestling, cross-country skiing, outdoor education, and drama.

The introduction of rotary classes, often in a new and larger school setting, presents problems that are best dealt with before classes begin. The student should be given an opportunity to learn the location of important areas such as his or her classrooms, the office, the washrooms, the library, the cafeteria, the stairs, the gymnasium, and the change rooms. If a locker is assigned to a visually impaired student, it should be in an easily identifiable location, such as at the end of a row. The lock should be a padlock rather than one with a combination. If at all possible, the student should be assigned an area where his or her special materials (tape recorder, typewriter, braille writer, electronic equipment, and large-print or braille books) may be stored securely. In the initial weeks of the semester, it is often beneficial to pair the visually impaired student with one or two sighted students who have similar timetables. In addition, it can be advantageous to have a staff person monitor the student.

The visually impaired student is expected to complete the OSIS requirements. He or she should be encouraged to choose courses that are realistic in both content and number, that will give a broad background of information and experience, and that will provide the best preparation for the student's postsecondary goals. Some visually impaired students may wish to audit courses for personal enrichment. They may also benefit from co-operative education and work experience.

Visually impaired students can be expected to take notes, submit assignments, and participate in class activities. Although some may find cassette tape recorders useful, most blind students work in a braille medium. They will need to know about research assignments well in advance so that they can gather material with the help of sighted volunteers, who will read the information onto tape.

If possible, tests and examinations should be written by all students in the class at the same time. A separate location may be necessary in order to accommodate special equipment. Tests may be given to visually impaired students in suitable print form, in braille, on cassette tape, or orally. When tests are given on cassette tape, the reader should state at the beginning the number of questions on the test and the value assigned to each one. Questions related to maps or diagrams may need verbal descriptions; alternative questions of equal difficulty may be substituted. Many visually impaired students require additional time to complete tests and examinations. For students unable to finish a test in the time allotted to the class, time-and-a-half is generally allowed. If the test or examination is very long, however, it may sometimes be necessary for the visually impaired student to write it in two sittings.

It is necessary to grade the work of visually impaired students by the standards that are applied to their sighted peers. In many cases, however, it is unrealistic to expect the same *quantity* of work as can be produced by the student's classmates.

CURRICULUM SUGGESTIONS

Physical and Health Education

- It is essential that visually impaired students participate fully in a physical education program, subject to any limitations indicated by their physicians. They need to learn how to use their bodies and how to keep fit through exercise, competitive sports, and recreational activities. The school can give them the opportunity to learn the recreational skills used in activities which they can then pursue in the local community.

- Teachers should stress the development of fine- and gross-motor skills, co-ordination, mobility, spatial awareness, body awareness, and social skills.

- Both team competition and individual skill development should be encouraged.

- Although some adaptations may be needed, such as a partner for running or supervision for safety reasons, there are many activities in which visually impaired students can participate independently. Running, swimming, gymnastics, dance, trampoline, roller and ice skating, skiing, wrestling, weight lifting, and track and field are some of the suitable activities.

Geography

- Raised-line maps and large-print maps and atlases may be purchased by the school for use by the visually impaired student. Other graphs and diagrams may have to be made by the specialist teacher. The specialist teacher of the blind or the Resource Services Library (see Appendix B) should be contacted for special materials.

- Although the detailed study of topographical maps is not a suitable activity for most visually impaired students, they should nevertheless be aware of the existence of such maps and have some idea of their content and application.

- It may be necessary for the student to have a classmate describe diagrams and fill in visual information presented in films, filmstrips, overheads, chalkboard diagrams, and so forth.

- Where it is not realistic to expect the student to complete an assignment (such as a drawing), he or she can give the required information in written form.

Family Studies

- The visually impaired student may need a partner to assist him or her in certain tasks.

- In teaching the use of electrical appliances, teachers must first allow time for the examination of the appliance. The student must be taught to follow the electrical cord from the outlet to the appliance. This safety procedure will help prevent burns from kettles and toasters.

- Seam guides, needle threaders, and needle wire guards may be purchased if required.

- A crochet hook can be used to thread the activity lever of a sewing machine.

- Students should be encouraged to purchase garments that are permanent press, drip dry, or wash and wear.

- Routines are very important in cooking and cleaning. When cleaning a room, students should use a well-organized basket of supplies and follow an established routine. It is essential that the student have a good mental map of the layout of the room before commencing.

- Labelling, particularly of equipment and food, will give the students greater independence.

- In measuring, the use of high contrast – for example, pouring milk against a dark background – is recommended.

- Although students should be familiar with labour-intensive methods – for example, making pastry from scratch – they should be encouraged to take advantage of labour-saving methods and materials and prepared foods.

Music

- In some cases, individual instruction may be needed to ensure that visually impaired students understand essential basic concepts.
- The teacher should ensure that visually impaired students can recognize popular instruments by touch and sound.
- Special music stands are available for the visually impaired.
- It may be helpful to darken sheet music for the partially sighted by photocopying.
- For those students who have to memorize all their music, sight-reading exercises should be provided in advance of the lesson. These students should be required to learn fewer pieces than students who can read regular or large-print music. Sight-reading should not be used for their evaluation.
- Music books are available in braille, but the braille music code must be taught by a qualified instructor. Advice is available from the specialist teacher of the blind or the Provincial Resource Services.
- Music can be produced on tape as well as in large print or braille.
- Braille-using students who wish to pursue academic studies in music *must* learn to read and write music braille.

Languages

- Visually impaired students can do well in language labs, although they may have difficulties with written grammar and spelling. It is essential that these latter skills be emphasized and developed in written assignments.
- Texts for the visually impaired may be obtained from the Resource Services Library (see Appendix B).

Visual Arts

- Emphasis should be placed on the tactile exploration of art objects, such as Inuit carvings, other sculptures, and wire and metal compositions.
- The concepts of shape, line, texture, pliability, and so forth should be approached from a tactile rather than a visual perspective; visual concepts should, however, be discussed as thoroughly as possible.
- Working with various media such as clay, wood, and fabric allows the student to develop and appreciate tactile skills and the resulting forms.
- Creative crafts such as weaving, macramé, rug making, metal and wire working, wood carving, leathercraft, puppet making, model making, needlework, beadwork, appliqué, lacing, and the creation of collages, mobiles, mosaics, and stained glass are particularly suitable activities for visually impaired students.

Mathematics

- Visually impaired students may need special equipment, such as a talking calculator, an abacus, a braille compass, a braille ruler, a braille protractor and geometric shapes, and bold-lined graphs and diagrams.
- The Nemeth code is a concise and functional form of braille notation for math and science. It is most conveniently written with a braille writer. The Nemeth code symbols for new concepts must be taught by the specialist teacher at the same time as these concepts are introduced in the regular class.
- Mathematics books are difficult to understand in taped form. They should therefore be brailled.
- Partially sighted students who normally do not use large print may find large-print mathematics texts a help with fractions, subscripts, and so forth.
- Closed-circuit television can be especially helpful in providing enlarged images for geometry instruction.
- Topics for independent study should be assigned if the class material is inappropriate for the visually impaired student.

Science

- If possible, visually impaired students should participate in setting up, performing, and recording the results of experiments.
- A facilitator is often required to help in labs - for example, to describe changes and to aid in measurement.
- Visually impaired students should be allowed to examine the apparatus and materials of an experiment before, during, and after the procedure.
- Partially sighted students should be as close as possible to all demonstrations.
- Concrete examples should be provided so that the student can learn the meaning of concepts such as volume, mass, density, and measure.
- In homework, fewer examples to support conclusions should be required of visually impaired students than of other students.
- Diagrams may be useful in the evaluation of some braille-using students, but a written description of the essential elements of the diagram may be more appropriate.
- Separate topics should be pursued through independent study if the class material is inappropriate for the visually impaired student.

Typing

- Typing skills are essential for visually impaired students. At the secondary level, students should be consolidating skills learned in the elementary grades.
- A one-to-one oral session with the student, fifteen to twenty minutes a day, three times a week, provides a good introduction to keyboard skills for beginning students.
- Timed drills to improve skill and accuracy should be used with discretion.
- Timed typing tests should be avoided.
- Composition of essays, stories, and poems at the keyboard should be encouraged.
- Tests and assignments, except in mathematics, should be typed once keyboard skills are established.
- Visually impaired students may benefit from the use of a computer with synthetic speech, which can provide them with immediate feedback of what they have typed (see pages 66-67).
- Special stands for partially sighted students can bring print into the most appropriate focal range. This optimal positioning of the page helps to prevent fatigue and encourages good posture.
- The size of type should be chosen to suit the needs of the partially sighted student.

Computer Studies

- A good background in keyboard skills is essential.
- Visually impaired students can benefit from having sighted classmates as partners.
- Because of incomplete or non-existent visual reinforcement, visually impaired students require extra hands-on practice. This practice is important in helping to build their confidence.
- Teachers should provide as much encouragement and oral reinforcement as possible.
- Scrap discs, cut open, should be available for partially sighted students to examine.
- Teachers should make sure that screens, keyboards, tables, and chairs are at a comfortable height.
- Computers and software for the visually impaired should be in a convenient and accessible location. If possible, the student should be allowed to use the same computer work station for all computer work.
- For partially sighted students, diffused natural light is desirable. It maximizes their ability to see the screen while leaving enough light to allow their classmates to see their notes.
- Computers should be placed in a position that minimizes glare and reflection from both window and classroom light. A glare reduction screen can help provide good contrast.

- Students should be allowed to experiment with monitor size, reverse video, colour, and contrast. Many partially sighted students can use a 40-character screen if it has good contrast.

- Computer printouts from a dot-matrix printer can be improved by photocopying, which increases the contrast and brings the dots closer together.

- Marking the letters *f* and *j* on the keyboard with small dots may help blind students to find the home keys.

- If no special equipment providing a braille screen is available for blind students (see pages 66-67), the teacher or class partner must read out all the materials from the screen. In this case, the student should take notes in braille, or should be provided with braille notes of the screen output.

Industrial Arts and Technical Shops

- Orientation in the room should take place before the term or semester begins.

- If necessary, a buddy system can be established.

- In order to understand what they are doing, visually impaired students need to know all the steps of a task in their proper order, as the steps may not always be performed in sequence in class.

- Visually impaired students must develop a familiarity with tools and machines and their location. This process requires one-to-one contact between teacher and student. Equipment may be labelled in braille or large print.

- A visually impaired student should become proficient with hand tools before advancing to electric equipment.

- Partially sighted students should be taught to use equipment as if they had no vision. Working in this way will prevent them from holding their faces dangerously close to the equipment.

- Drawing plans may be an unsuitable activity for partially sighted students. Teachers should have realistic expectations, allowing students to substitute written plans or explanations if necessary.

- Raised-line drawings or concrete objects may be used in instruction instead of diagrams of tools and equipment.

GUIDANCE

Special Needs

In many respects, the guidance needs of visually impaired students are the same as those of their sighted peers; however, the visually impaired in some ways may require special assistance. The observations and suggestions below address the special needs of these students.

- Visually impaired students may need to extend their credits over an extra year in order to ensure that they get a well-rounded secondary education.

- Since it is difficult for them to acquire study skills by observation, visually impaired students may require extra assistance in learning how to study.

- At the beginning of a year or when entering a new school, visually impaired students may need help with adjustment problems involving classroom locations, academic expectations, social behaviour, and so forth.

- Students should be taught how to request assistance and when and how to express thanks for help.

- Students will need to develop independence and to evolve their own coping strategies.

- Self-acceptance and self-expression should be encouraged.

- These students need positive personal contact with adults who accept them as they are and who encourage them to be independent and to realize their full potential. A guidance teacher can offer a consistent and reliable reflection of the student's social, emotional, and academic progress.

- The student may benefit from having a staff contact person who can respond to his or her special needs.

- A visually impaired student must accept that his or her visual limitations make certain activities, such as driving, impossible.

- Visually impaired students need to realize that they may have to work harder than sighted people to reach their goals.

- Genetic counselling may be advisable for some visually impaired students. Information can be obtained from community agencies and/or medical personnel.

THE MULTIHANDICAPPED
PARTIALLY SIGHTED AND BLIND

THE MULTIHANDICAPPED PARTIALLY SIGHTED AND BLIND

INTRODUCTION AND GENERAL SUGGESTIONS

Many students who are visually impaired have other disabilities as well. They may exhibit one or more of the following: orthopaedic disorders, communication disorders or delays, emotional disturbances, and intellectual impairment. They may manifest process dysfunctions and/or experience deficits in their ability to interpret and respond to sensory input.

The intellectual ability of many multihandicapped students may be within the normal or educable range, but their intellectual development often exhibits delays and deficiencies in one or more areas. Students in this category often show a profile of splinter skills: one or two areas of development are almost at an age-appropriate level, while others are far below it.

Multihandicapped children often experience a great deal of hospitalization and medical intervention during their early years. As a result, many will not have had the opportunity to benefit from preschool services and will have missed other early learning opportunities. This lack of stimulation accounts in part for the developmental gaps commonly exhibited at the preschool stage.

The potential of these students should be determined individually, with each student being given the opportunity to develop through the implementation of realistic programs. *It must be assumed that the student can and will learn.* The teacher must develop the student's program with the expectation of progress. The multihandicapped student is very sensitive to the teacher's attitude and will respond accordingly: an enthusiastic, positive attitude will have an encouraging, positive effect.

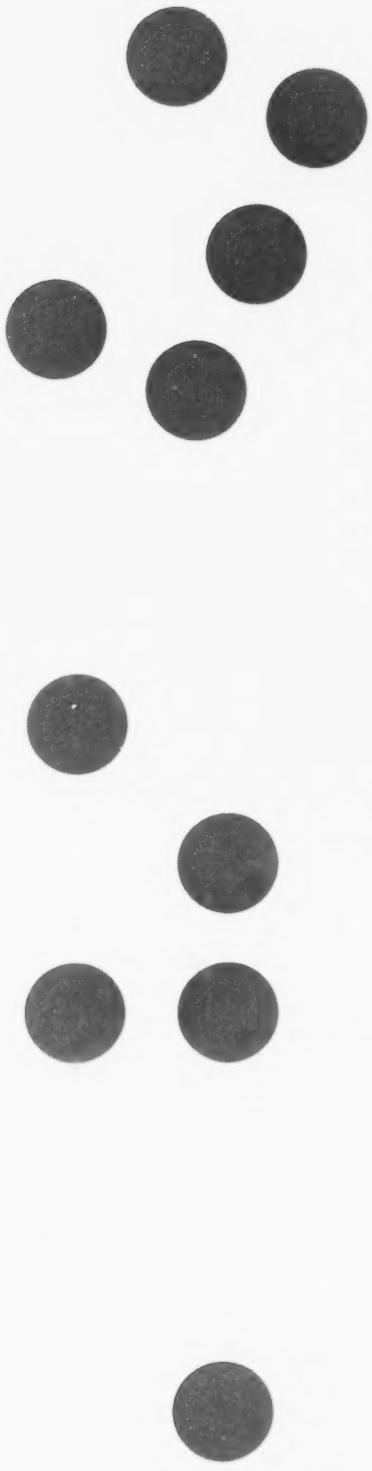
The needs of multihandicapped students are complex and present each parent and educator with a unique challenge. The rewards of meeting the challenge, however, are many, as the changes in the students' behaviour and development become observable, their awareness of themselves and others within their environment increases, and they begin to relate more confidently to their world.

The needs of these students must be assessed individually, and a prescriptive program must be developed for each student. Because it is absolutely essential that the total individual be addressed, the appropriate placement will depend on the order of priority of each student's needs. Possible environments include the student's home, schools for the visually impaired, orthopaedic centres, integrated classroom settings, classrooms/schools for the trainable retarded, group homes, and community residences. Achievement must be measured from each student's starting point in a program. The multihandicapped must be given many varied opportunities to practise skills, so that they may raise their competence in every developmental area to the highest possible level. No one person can meet all the needs of a multihandicapped student: the unified commitment of a multidisciplinary team is an essential element in the education of these students.

Because of the multiplicity of problems present in the profile of a visually impaired multihandicapped student, assessment is complicated by the fact that it is extremely difficult to obtain valid results from formal testing. As an alternative, a teacher or consulting teacher may collate the following information for consideration by a multidisciplinary team, which will then make practical program suggestions and educational recommendations:

- the medical history of the student;
- the present home and school settings;
- the student's developmental history;
- a record of direct observation of the student, noting his or her developmental level in all areas;
- any anecdotal or specific recording of behaviour that may be relevant to an assessment of the student's present program or setting.

It is imperative that the multihandicapped student's educational program allow for the integration of input from the various sensory modalities. The multihandicapped may exhibit a "mask" of retardation, which should be evaluated and challenged. Because prolonged passivity can produce behaviour that is counterproductive to learning, stimulation and normalization are necessary elements of every student's program, and appropriate activities should continue throughout the student's waking hours, even outside school time. Educational programs should include objectives for growth in the following areas of development: psychomotor, cognitive, social and interpersonal, and orientation and mobility.



SPECIFIC SUGGESTIONS FOR EDUCATIONAL PROGRAMMING

A few suggestions and considerations relevant to each of these developmental areas are offered in the following chart. It is essential that teachers charged with the responsibility of designing the student's program first perform the necessary task analyses. At each level, parallel tasks must be developed, in order to add variety to the program while continuing to provide the necessary repetition.

DEVELOPMENTAL AREA	OBSERVATIONS/SPECIAL NEEDS	ACTIVITIES/TASKS
1. Psychomotor		
a) Gross-motor skills	- Perceptual skills such as body awareness, directionality, laterality, and spatial relationships should be developed. - An audible cue from someone in front of the students as they are walking or running will help them gain confidence in their ability to move freely within their environment. - New experiences must be introduced slowly and carefully. These students cannot observe others having fun on equipment, for example, and may therefore find the experience frightening at first. - Throwing, rolling, and catching are easier to learn with big beach balls, cushions, or bean bags, accompanied by warnings (e.g., "Get ready, here it comes"). - The teacher must occasionally provide solutions to movement problems and/or physically assist the student to move correctly. With time, this assistance may become unnecessary.	- walking forward and backward to varied rhythms - running, marching, tiptoeing - performing a vertical or horizontal jump - hopping on one foot - sliding, galloping, leaping, skipping - ice and roller skating - pulling and pushing objects - holding and carrying objects - lifting and lowering objects - performing rolls, sit-ups, push-ups - moving under and over objects - climbing up, down, and over objects, ladders - throwing, catching, kicking, rolling, bouncing a ball - using outdoor play equipment
b) Fine-motor skills	- The student should be encouraged to use two hands while performing tasks. - Shapes that can be easily enveloped in the student's hand should be used. - The student should be encouraged to explore objects of various textures. - If the student is expected to discriminate between objects by texture, each object must have the same texture all over. - The teacher can encourage development of the pincer grasp by placing small, possibly edible, objects on a table for the student to pick up and drop into a can. - Tactile experiences should involve sand, flour, cornmeal, macaroni, and other materials. The students should not be limited to sand alone. - Placement of pegs or materials, one at a time, at the student's midline allows for observation of which hand he or she prefers and how it is used in the task.	- grasping, squeezing, and releasing objects - opening and closing fists and wiggling thumbs and fingers - using pincer grasp (thumb and index finger) - transferring objects from one hand to the other - placing objects in designated containers (boxes, etc.) - playing with objects in water - playing with objects in sand - showing hand dominance

DEVELOPMENTAL AREA	OBSERVATIONS/SPECIAL NEEDS	ACTIVITIES/TASKS
2. Cognitive		
a) Concept development - self and others	- These students need to develop an understanding of the world and the things within it. - They need to understand themselves and how they relate to people and things within their environment. - They must be helped to make associations between word and object, word and feeling, and word and need.	- identifying parts of the body on oneself and others by touching - identifying clothing on oneself and others - following simple commands and instructions - recognizing same and different in relation to objects and position - demonstrating concepts of right, left, front, and back in relation to body movements, e.g., responding to "Raise your left leg", "Rub the back of your head" - telling own age, birthdate, sex, address, and telephone number - understanding time relationships, e.g., today, yesterday, tonight - expressing needs, wants, ideas
b) Concept development - self and environment	- When objects and actions are being labelled, real objects and experiences should be used whenever possible.	- locating and enjoying outdoor play equipment - describing the weather - indicating the appropriate clothing for the day's weather - naming the days of the week, months of the year, seasons - relating tools to tasks - classifying furniture according to location - arranging events, routines, past experiences in sequence - identifying fruits, vegetables, common foods - transferring the concept of food from one form to another (e.g., from raw potatoes to French fries) - identifying foods, objects, and places by smell - identifying and classifying foods by taste
c) Concept development - number	- Many experiences with concrete materials will be necessary to ensure the students' understanding of concepts.	- counting by rote - following directions using numbers - adding one to a group - subtracting one from a group - counting by twos, fives, tens

DEVELOPMENTAL AREA	OBSERVATIONS/SPECIAL NEEDS	ACTIVITIES/TASKS
d) Communication skills i) Receptive language	- When a student has expressive difficulties, his or her receptive understanding must continually be challenged. - Before articulation can be improved, a bond of trust must be established. Sounds are developed through tactile and auditory means. - Syntax and pragmatics must be taught in a structured and sequential manner.	- understanding and responding to own name - listening selectively and responding to voices and familiar words, e.g., "Sit down", "Come" - locating the source of sounds - pointing to body parts - giving a toy or object on request - touching objects on request - picking up items on request - following one-, two-, and three-step directions - demonstrating an understanding of specific question forms, e.g., "How many?", "What shape?", "Whose?"
ii) Expressive language	- Readiness for speech can be developed through activities that increase the child's awareness of speech organs and their function. - Simple role-play activities may help the student to understand proper pronoun and verb usage, e.g., "I ran; Bobby ran; We ran"; "John jumped; Nancy hopped; They jumped and hopped."	- vocalizing when spoken to - babbling using several consonants: "ba ba ba", "da da da", "ma ma ma" - imitating breathing - blowing and sucking through the mouth - imitating tongue and lip movements - avoiding drooling by swallowing - imitating sounds involving tongue and lip movements - imitating sounds, syllables, and words - verbally identifying objects, actions, other things with single-word names - answering specific questions about self, others - responding to specific question forms - using pronouns, articles, and words indicating physical position, etc., appropriately in sentences - using verb agreement and time phrases correctly
iii) Auditory development	- A sequentially designed auditory program is essential. - To ensure active listening, meaningful listening activities should be followed by questions about sequence and content. The answers will help the teacher to determine the student's involvement and plan for further experiences.	- showing an awareness of sounds in the environment - locating sounds by going to them - demonstrating ear-hand co-ordination by grasping a sounding object - identifying common environmental sounds

The rapid introduction of new technology has brought with it many challenges and opportunities for the visually impaired. The devices now available, however, cannot begin to substitute for a competent specialist teacher. It is imperative that visually impaired students continue to receive individualized and sequential instruction in basic skills, including practical special skills such as the manipulation of a slate and stylus and the use of an abacus, while acquiring new abilities, such as keyboard skills, that will allow them to take advantage of the new technology and may lead to a place in the job market.

For information on the Ministry of Health's Assistive Devices Program (ADP), see Appendix B.

DEVELOPMENTAL AREA	OBSERVATIONS/SPECIAL NEEDS	ACTIVITIES/TASKS
		- discriminating animal sounds, transportation sounds, household sounds - listening actively to stories through headphones - identifying various rhythm instruments - identifying a series of instruments by sound - discriminating between loud and soft sounds, high and low pitch, fast and slow tempo - discriminating fast and slow by body imitation - matching tones, music pulse, music patterns - identifying story characters
3. Social, interpersonal, and life skills	- Many of these students are very egocentric and initially demand a large amount of personal space. Positive exchanges with trusted companions will encourage social and emotional growth. - Turn taking and parallel play must be initiated and encouraged by adults. - The student's tolerance of auditory stimuli may be extremely limited. Verbal encouragement may help the student to become less fearful of sounds. - Changes in routines, care-takers, etc., need to be carefully initiated, with the understanding that the students will find such changes difficult to accept. - Behavioural strategies should be agreed upon and consistently practised by all adults in the student's environment. - These students enjoy and are motivated by the sound of objects dropping into a container. - Fine-motor skills are often delayed because of physiological problems arising from an orthopaedic disability and/or a lack of stimulation. - Hand-over-hand assistance may be necessary for the completion of some tasks. Independence will develop with time.	- sharing toys, materials, attention - waiting for a turn - participating in parallel and group play - playing purposefully and with meaning - paying attention to oral instructions - co-operating in most situations - enjoying interactions with other children, adults - avoiding self-stimulation - accepting changes in routines, teachers, etc. - performing manipulative tasks using peg boards, pop beads, puzzles, clothes pins, blocks, beads, shape grids, etc. - sorting concrete objects such as bottlecaps and paper clips - identifying a circle, square, triangle, rectangle by touch - discriminating texture, shape, and size by touch - stringing beads in a directed pattern - matching and pasting concrete objects or shapes such as toothpicks and bottlecaps - understanding right, left, top, and bottom orientation on paper

DEVELOPMENTAL AREA	OBSERVATIONS/SPECIAL NEEDS	ACTIVITIES/TASKS
	- These students tend to have a very short attention span. It can be helpful to alternate passive and active activities, with very short periods of time spent on any one activity. - A tactile readiness program will prepare a student to be introduced to braille. The program should be well structured and sequential. - An adult may need to encourage the appropriate expression of emotions such as joy, fear, and anger; the student may not know to cry if upset or laugh and smile when happy. - The observation and monitoring of behaviour and conditions immediately preceding undesirable behaviour may be helpful in determining ways of eliminating the undesirable behaviour. - Task analysis and a careful consideration of the student's environment at home and at school must be undertaken to determine which life skills each individual should be working to develop. - A student may initially require a great deal of assistance; there should, however, be gradual movement towards as much independence as possible.	- following a tactile line or braille line from left to right - distinguishing which of three objects is different - distinguishing braille cell raised forms - distinguishing braille cell and name - reacting positively to pleasure, comfort, satisfaction - reacting negatively to discomfort, pain, frustration - demonstrating control by resisting aggressive behaviour - performing personal care tasks - eating neatly and experiencing a variety of flavours and textures - demonstrating good table manners - dressing and undressing, demonstrating an understanding of front and back of clothing - assisting in food preparation to gain an understanding of measuring, pouring, mixing, etc.
4. Orientation and mobility	- The student must be prepared orally for each experience. - Touch and a great deal of oral encouragement must be provided until the student gains confidence and experiences independence in mobility.	- walking with a mature demeanour: • arms in opposition to legs • correct heel-to-toe placement • smooth integration • good body alignment - locating specific areas within personal environment - locating equipment, toys, and furniture within environment - recognizing what one is walking on: flooring, grass, cement, snow, etc. - using sound clues to orient oneself - walking with confidence and independence - using hands to avoid obstacles - using judgement in climbing, jumping, stepping, etc.

ESSENTIAL SKILLS FOR THE VISUALLY IMPAIRED

LISTENING SKILLS

All students can benefit from good listening skills. Their importance for the blind or partially sighted cannot be overemphasized, however, as hearing is the only sense through which they can gain information from distant points in their environment. The less a student is able to rely on sight to gather information from the environment, the more critical it is that he or she learn to use sound as a source of information. The ability to tune into sounds not only adds to a student's academic learning potential but is essential in the development of orientation and mobility skills.

Visually impaired students need to be taught how to listen: they do not automatically compensate for their poor vision by developing superior powers of concentration. Listening is a complex mental process, involving not only passive hearing but also the active discrimination of sounds and the attachment of meaning to them.

The student must be motivated to listen and learn. The teacher must provide the conditions conducive to learning and choose activities that will interest the student in listening. The student should be taught *how* to listen, *when* to listen, and *what* to listen to. Training should include listening to both environmental sounds and speech. Activities should develop such skills as locating, identifying, and discriminating sounds, sequencing, following directions, finding details, and drawing conclusions.

Listening training cannot change an individual's physical capacity to hear. Good listening habits, however, can substantially increase a visually impaired student's learning potential and significantly alter the way in which he or she relates to the world.

Teachers can teach listening skills in a variety of contexts: to mixed or separate small groups of sighted and visually impaired students, or one on one, or to a whole, mixed class. There are various programs for developing listening skills throughout the grades. The chart that follows provides a sample of listening skills and related activities that may be useful to teachers who have visually impaired students in their classes.

Listening Skills and Related Activities

LISTENING SKILLS	SUGGESTED ACTIVITIES
Sound awareness	- Students make noises for others to identify, e.g., crumpling paper, rustling feet, pouring liquid, cleaning the chalkboard. - The teacher uses a tape recorder to build a library of sounds – kitchen sounds, school sounds, outside sounds, animal sounds, etc. – for identification by students.
Sound localization	- Where Am I? As the teacher moves about the room, the students must identify his or her location by sound (in front, behind, left, right). - Hide and Seek. Students must find a beeper ball, following the path of its movement by sound.
Sound discrimination	- Who Am I? Students practise recognizing voices on the telephone. - What Noise Did It Make? Several noise-makers are shown and sounds produced. Students try to describe each sound. - Students listen to musical instruments and try to distinguish the different sounds. - Jumping Game. Students are told to jump if all the words in a list end with the same sound ("pat, rat, fat"; "can, cap, ran"). - Students must finish a rhyme: "Tom and Bill climbed up the _____."
Auditory analysis	- The teacher produces sounds on three different instruments; students then name the instruments in the order in which they were played. - Students listen to a series of tones and identify the loudest, softest, highest, and lowest.
Following directions	- Simon Says. - Using a prepared worksheet, the teacher directs students to "circle", "underline", "put an X on", etc. - Students are given three tasks to complete in order. - The teacher divides the class into groups and assigns to one student in each group a task that requires following directions. If the student does it correctly, the group scores a point.
Listening to language sounds	- Students are asked to indicate which words in a list rhyme: cat, ball, bat, etc. - I Spy. Students try to think of words that sound like a particular word – e.g., words that start like "chair". - The teacher gives the students a list of two-syllable words; students are asked to create nonsense words by reversing the syllables: ribbon – bonrib; robin – binro.

LISTENING SKILLS	SUGGESTED ACTIVITIES
Finding main ideas/details	– What Should the Title Be? The teacher asks students to give titles to stories they have just heard. – The teacher reads a simple story and then asks students to retell it.
Auditory sequencing	– The teacher reads a story; students must then retell it in sequence. – The teacher says a series of sounds or numbers, which the students must repeat. – The teacher says the days of the week, months of the year, numbers, etc., in sequence, leaving one out. Students must identify which one is missing.
Making inferences and drawing conclusions	– What Happens Next? The teacher begins to read a short story; students complete the story. – Students identify the mood or intention of the speaker in expressions such as "I should say not!", "Certainly", "Give me a break!", "Who says so?", "That's nice."
Using context	– The teacher presents simple sentences with a missing word, which the students must fill in. – When the teacher reads a story with incongruous elements, the students must identify those sentences that do not belong. – The teacher writes a short description of a character known to the students, without using names, and reads it to them, asking them to identify the character. The students themselves can also provide descriptions for identification by other students.
Making comparisons	– As the teacher tells a story, the students indicate when something silly has been added. – The teacher tells two versions of the same story and the students then compare them.
Distinguishing relevant and irrelevant information	– Students must find the irrelevant word in sentences with an extra word added. – What's Wrong With This? Students must correct false statements.

ORIENTATION AND MOBILITY

Independent mobility can give a blind person a confidence and self-reliance that no other ability has the power to give.

W. Hands Levy, 1872
Pioneer Educator of the Blind

Introduction

Orientation and mobility training prepares visually impaired children and adolescents to be as independent as possible within their own environments. Orientation and mobility skills are fundamental to the success of these students in several important areas: social interaction, mental and physical well-being, concept development, and the acquisition of first-hand information. Training in orientation and mobility is as necessary for the partially sighted as for the blind student.

Orientation can be defined as the awareness of oneself in relation to the physical environment; mobility is the skill of travelling safely, comfortably, and independently. Orientation and mobility skills give the visually impaired the means of travelling with confidence and of knowing where they are going.

The amount of orientation and mobility training visually impaired students will require depends upon how much vision they have and how well they are able to use it. All students will need help in developing motor skills, acquiring basic concepts, and learning to use their remaining senses effectively. In addition, some children will need formal, timetabled orientation and mobility services as early as their first days in school; other students will not be responsive to such instruction until well into their teens. Preliminary skills may be taught by a specialist teacher, who may familiarize the student with the classroom or school and develop essential concepts. A qualified orientation and mobility instructor will provide formal training, including long-cane instruction and street-crossing methods. To be effective, formal instruction should be given daily. The lowest acceptable frequency is three times a week. This frequency ensures an adequate level of orientation and mobility concept development and the reinforcement of mobility skills.

At present, there are two service models in Ontario for formal training in orientation and mobility by a qualified instructor: (1) service provided on contract through CNIB or private individual instructors and (2) service provided by an orientation and mobility instructor hired by the school board. The second model occurs in school boards with a large number of visually impaired students.

School boards can offer orientation and mobility instruction at the secondary level as a non-guideline credit course given by a qualified orientation and mobility instructor in co-operation with a specialist teacher of the blind. Any school board that wishes to offer this course should contact the nearest regional office of the Ministry of Education. Further information can be found in section 6.9 of OSIS and in Policy/Program Memoranda No. 3, "Approval of Experimental Courses and/or Unauthorized Textbooks", revised 1982, and No. 76C, "Programs Provided by a Board in Lieu of a Provincial Service for Deaf, Blind, and Deaf-Blind Exceptional Pupils", September 20, 1985.

Orientation and mobility instruction is a cumulative process: the skills a child learns during early childhood will be built on throughout the school years and adulthood. Ideally, preparation for orientation and mobility training begins in infancy, with care-givers helping the child to develop a strong personal body image and providing meaningful sensory experiences. For example, visually impaired infants must be taught to reach for objects, so that they may learn that there is a world beyond their bodies. Initially, they will need sound cues to help them to attain this developmental milestone.

Preschool and Kindergarten Students

The following suggestions may be useful for informal orientation and mobility training at the preschool and kindergarten levels. Care-givers should:

- introduce body awareness activities, such as the naming of body parts and the identification of their position in space;
- avoid overprotecting the child in the play environment;
- repeat activities with the child;
- teach the child to identify the presence of sound in the environment;
- encourage the child to experience both moving and stationary sound, making sure that he or she can judge the distance and direction of a sound's source;
- encourage the child to categorize or classify sounds according to the rooms or areas in which they occur;

- orient the child to integral parts of family and social life, such as appropriate methods of eating and related social graces, both at home and when eating out;
- show the child how to distinguish between smells and tastes and how to confirm the source of a smell and the identity of food;
- encourage the child to discover as much as possible about the attributes of any object with which he or she makes contact, in order to develop concepts of shape, size, and texture;
- encourage the child to use thermal cues (such as the heat from the sun, stoves, and heaters) as aids to orientation;
- encourage the use of whatever residual vision the child has, in combination with appropriate orientation and mobility techniques;
- help the child to be aware of "personal space" (i.e., the space around the individual that should not be intruded upon by others during interaction);
- monitor the child's movements to help increase his or her awareness of the body in space, encouraging proper posture, heel-to-toe walking, free motion of the arms while walking, and erect positioning of the head;
- help the child to develop an awareness of pedestrian and vehicular traffic before he or she attends school;
- help the child to be aware of street names, geographical features, cardinal directions, and time/distance relationships during trips and family outings, even though the child may not grasp all the concepts.

Elementary Students

It is imperative that young visually impaired students develop effective orientation and mobility skills if they are to function in the regular elementary school classroom. Independent, safe mobility at this stage requires motor skills and an understanding of basic concepts. Each student will progress at his or her own rate and must be allowed time to become competent at each skill before going on to the next. Orientation and mobility training for visually impaired students in elementary school aims for the mastery of the following skills and abilities:

- development of an accurate body image;
- awareness of one's position in space;
- meaningful organization of the environment;
- awareness of body movements;
- development of the tactile sense through exposure to people and objects of various sizes, weights, and dimensions; various forms and qualities of materials; various temperatures; and various textures;
- integration of parts into a whole;
- development of the auditory sense through the identification and localization of environmental sounds, the movement of the body in relation to sound, the development of auditory memory, and practice in following directions;
- development of odour discrimination as an aid to finding one's way;
- development of the sense of taste;
- development of the kinaesthetic sense (using information derived from one's movement through space) and the proprioceptive sense (using information received via internal impulses from parts of the body);
- use of residual vision through eye/hand co-ordination, discrimination of visual cues, sight-enhancement aids, scanning techniques, and visual memory;
- systematic search techniques;
- correct turning techniques;
- understanding and use of cardinal directions;
- ability to recognize indoor features and textures and use them as landmarks in determining one's location;
- ability to familiarize oneself with a room;
- identification of outdoor topography and textures;
- identification of specific weather features;
- knowledge of modes of travel;
- knowledge of approximate elapsed time and distance;
- identification of rates of movement;
- understanding of room and house numbering systems;
- identification of street patterns and layouts in school, residential, and business areas;
- identification and use of traffic signals;
- utilization of auditory, tactile, and modified maps;

- use of sequenced landmarks to maintain orientation;
- basic pre-cane skills (e.g., trailing, protective arm techniques, sighted guide techniques, landmarks and cues, direction taking, squaring off);
- use of routes;
- ability to conduct oneself in a socially acceptable manner;
- basic cane techniques;
- ability to move in and between various environments (e.g., home, school, residential areas, business areas, shopping centres, stores, and restaurants);
- use of public transportation.

Secondary Students

The needs of visually impaired secondary school students are many. Their academic and social environments are expanding at this stage, creating a demand for greater independence. The social pressures experienced by the average secondary student are especially threatening to students with limited independence, who may experience extreme social isolation. The ability to travel independently is integral to every phase of the personal and social development of these students.

An ongoing program of orientation and mobility instruction is therefore crucial at the secondary level. The needs of students entering secondary school will vary greatly, depending on their previous orientation and mobility experience, their psychological development, and their level of maturity, as well as their degree of visual loss. Instruction must begin at each student's level of functioning. The orientation and mobility training of secondary students may include:

- extension of cane skills;
- extension of orientation skills (e.g., use of traffic sounds, cardinal directions);
- extension of the use of orientation aids (e.g., tactile maps);
- refinement of the ability to familiarize themselves with new surroundings (e.g., a new school);
- extension of route travel to new destinations (e.g., to new school, friends' homes, recreational facilities);
- continuing familiarization with business and shopping areas;
- business area travel;

- shopping mall travel and shopping procedures;
- practice on complex street crossings and routes;
- rural area travel;
- public transportation skills, including the use of public transit and taxis;
- problem-solving techniques and decision-making skills (e.g., what to do if the driver lets you off at the wrong stop);
- appropriate procedures for obtaining information (e.g., getting bus schedules, making airline reservations);
- review of appropriate ways of approaching the public for help, or refusing assistance;
- maximization of residual vision through increasing use of sight-enhancement distance aids both indoors (e.g., to see the chalkboard) and outdoors (e.g., to read store and street signs);
- participation in physical activities in school, with the required adaptations of programs and equipment, and in recreational activities outside school;
- participation in social events requiring developed social skills.

Conclusion

In order to succeed, orientation and mobility instruction must be directed by trained instructors with considerable proficiency in their field as well as expertise in the education of the visually impaired and in child growth and development. This instruction can and should be supplemented by the efforts of concerned individuals in the home, school, community, and city. Working together, family, friends, and professionals can encourage visually impaired students to undertake the safe and independent exploration of their world.

LIFE SKILLS

Regardless of the degree of visual loss or the age of the visually impaired student, life skills are a vital component of his or her education. These skills are acquired and applied in the home, school, and community; without them, independent living is impossible. Sighted students learn ideas and skills through incidental observation, but the visually impaired must be deliberately taught many of these basic concepts. Life-skills instruction can be incorporated into academic subjects by the classroom teacher, or it can be offered as a separate component by the specialist teacher of the blind or resource teacher.

Suggestions for life-skills teaching strategies in the Intermediate and Senior Divisions can be found in the curriculum guideline *Personal Life Management*.[6] These may be adapted to the special needs of visually impaired students.

Parents play a crucial role in the development of their child's life skills. With the support and encouragement of professionals, parents will gain confidence in their ability to give their child this essential training. Professionals can assist parents by providing teaching suggestions, materials, and actual demonstrations of useful techniques. They can also help the family to identify specific areas in which the student requires further instruction. It is vital, however, that professionals not take over the parents' role. The professional, bound by the obvious time restrictions, cannot help the child to apply life-skills techniques as readily or effectively as a parent can in the home and community.

The chart opposite gives some examples of life skills.

6. Ministry of Education, Ontario, *Personal Life Management, Intermediate and Senior Divisions* (Toronto: Ministry of Education, Ontario, 1985).

Life Skills

SKILL CATEGORY	REPRESENTATIVE SKILLS
Self-care and awareness	– taking responsibility for personal grooming, hygiene, and body functions, eating correctly, caring for clothing
Cooking	– preparing food, using kitchen appliances, understanding nutrition
Social skills	– making friends, being a good guest or host/hostess, behaving appropriately in restaurants and cafeterias
Communication	– using the telephone, handling emergencies and fire drills, asking for assistance or information, asking directions
Money management	– banking, writing signatures, shopping
Safety awareness	– knowing how to recognize an emergency and summon help; knowing safety procedures in the kitchen and school shop
Recreational skills	– playing games, pursuing hobbies and crafts
Appreciation of the arts	– understanding and/or expressing oneself through music, art, and drama
Orientation and mobility	– see pages 59-62
Organization	– keeping track of personal belongings, knowing one's schedule, planning free time
Time management	– keeping appointments, meeting deadlines, planning work on assignments

The acquisition of life skills requires constant practice under close supervision. Feedback from the parent or teacher is necessary in order to reinforce the skills and develop the student's self-confidence.

The life skills that the visually impaired learn in their school years will be applied throughout their lifetimes. These essential skills will be of considerable value in work situations and will enhance the students' interpersonal relationships; in short, these skills will help students to integrate successfully into society.

SIGHT-ENHANCEMENT AND SIGHT-SUBSTITUTION AIDS FOR THE PARTIALLY SIGHTED AND BLIND

SIGHT-ENHANCEMENT AND SIGHT-SUBSTITUTION AIDS FOR THE PARTIALLY SIGHTED AND BLIND

Because the eyes of young partially sighted children have a wide range of accommodation, and because school texts in the early years are usually printed in rather large type, these students often require no visual aids. When aids become necessary, however, they should be sought. Glasses or contact lenses should be used if they are helpful, as should other optical aids such as telescopic or microscopic lenses, hand-held or stand magnifiers, and closed-circuit televisions. Non-optical aids include reading stands, high-intensity lamps, and large-print texts. These aids will not produce perfect visual acuity, but by improving the functioning of the partially sighted student's near vision, they can increase his or her ability to perform in the classroom.

The use of sight-enhancement aids separates students from their sighted peers. The devices may be cumbersome and expensive, and their use may require special training. The teacher's supportive attitude can help students to use the aids successfully. In addition, the teacher can and should encourage a positive attitude in the classroom towards the special needs of partially sighted students.

Individuals will have different responses to sight-enhancement aids. The age, maturity, intelligence, and degree of co-ordination of the students will be factors affecting how well they use the aids to satisfy their needs. Above all, strong motivation and a good attitude will enable students to get the most out of the aids at their disposal.

Closed-circuit television devices for reading can be useful for the partially sighted. These aids may be designed for use in one area only or may be portable and allow for connection to a television set at home.

The range of devices available to the visually impaired has increased significantly in recent years, thanks particularly to innovations in computer technology. Computer screen magnification is one such innovation. In some portable equipment, magnification allows the partially sighted individual to see the screen as he or she is typing and to make corrections before printing out the copy. Software that enlarges the screen of a non-portable computer is also available. With these magnification devices, full word-processing capacities as well as regular programming functions are accessible to the partially sighted. Any technology that makes reading easier, such as closed-circuit television, will facilitate the writing process as well.

Sight-substitution aids for totally blind individuals can be divided into four groups: (1) electronic (refreshable) braille devices, (2) computers with synthetic speech, (3) tactile optical scanners, and (4) audio optical scanners. Advances are being made so rapidly in this field that reports on the latest technology are soon out of date. Information on new developments can be obtained from the Centre for Sight Enhancement (of the University of Waterloo's School of Optometry), the Centre for Sight Substitution (of the W. Ross Macdonald School), and the Technical Aids Department (of the Canadian National Institute for the Blind in Toronto). (See "Resource Agencies and Support Groups" in Appendix C for addresses and phone numbers.)

Electronic braille devices use a display with a fixed number of braille cells. The braille dots within the cells are activated electronically and can be changed at will by the operator. Electronic braille devices can also store information on cassette tape and/or floppy disk. They allow the user full word-processing functions, including a spelling program. The operator can check work thoroughly in braille before printing it out on a regular printer. The devices can also produce "hard copy" braille, using a braille printer, and can connect to public information data bases through a modem.

Synthetic speech is another means by which the blind can receive information from the computer. It gives the user an audio readout of the information on the screen. The speech function may be added to a computer by means of either a simple card plugged into the terminal or a unit in a box separate from the computer. This synthetic speech gives the operator access to word-processing, data-base management, and other programs. It can also be used in conjunction with electronic braille devices.

Tactile and audio scanners are also available. The Optacon is a device that reads print automatically by means of a miniature hand-held camera connected to an array, which gives a tactile impression of the letters. The Kurtzweil Reading Machine is an audio optical scanner that converts print to oral output.

Software is now available for the translation of ordinary print directly into braille. Persons with no knowledge of braille, but with access to a home computer, can produce good-quality braille with this device.

ASSESSMENT AND EVALUATION

There are four categories of assessment and evaluation of visually impaired students: medical assessment, assessment of visual functioning, evaluation of student achievement, and program evaluation. All four types of assessment and evaluation are essential in defining the student's educational program. A series of sample assessment forms is provided in Appendix A.

MEDICAL ASSESSMENT

Teachers need to be alert to the indicators of visual impairment, especially in young children, whose disability may not yet have received medical attention. The following abnormalities in appearance and behaviour may signal a visual disability that should be brought to a physician's attention:

1. *Appearance of the Eyes*
   - encrusted lashes
   - swollen or red lids
   - frequent sties
   - discharge in the eye or along the lid
   - eyes that are usually red and watery
   - pupils of different sizes
   - clouding of the pupils
   - eyes that move constantly
   - drooping eyelids
   - eyes that do not appear straight (one or both turn in, out, up, or down)

2. *Visual Behaviour*
   - squinting, blinking, frowning, contorting the face, constantly rubbing the eyes or attempting to brush away blur, tilting the head to see
   - closing one eye when looking or reading
   - holding reading material too close or too far away or frequently changing the distance of reading material
   - thrusting head forward or holding body tensely when viewing distant objects
   - inattentiveness during reading, inability to read for long periods without tiring physically, deterioration in reading accuracy towards end of task
   - undue light sensitivity
   - tendency to reverse letters and words or to confuse letters and numbers that have similar shapes
   - repeatedly losing the place in a sentence or on a page (inability to "stay on the line")
   - problems with spacing or staying on the line in written work
   - stumbling over objects or in the playground
   - preference for passive activities rather than active play
   - daily fluctuation of vision according to the student's physical and emotional health and motivation to concentrate
   - difficulty in seeing the chalkboard
   - difficulty in copying from the chalkboard or reference books

3. *Visual Complaints*
   - headaches, nausea, dizziness, pains
   - burning or itching of eyes
   - blurring of vision

For further information and services, teachers should contact board consultative services (special education personnel and consultants) or the Provincial Resource Services (see Appendix B).

To assist the attending doctor in providing the best possible medical assessment of the student's visual impairment, the teacher and parents should provide detailed information for the doctor in advance of a medical examination (see Form C in Appendix A). Parents will be asked to sign a release-of-information form to give the school board access to the medical report. (See Form D for a sample medical report form.) If a visual aid is prescribed, a follow-up report from the teacher and parents to the doctor, evaluating the student's success with the aid, will allow for modifications if they are necessary. Form E in Appendix A can be used for such a follow-up report.

ASSESSMENT OF VISUAL FUNCTIONING

The medical measurement of visual acuity does not necessarily indicate how a student will function in school: a student's visual ability will fluctuate under various conditions, and the same visual acuity in two individuals may produce vastly different levels of performance, depending on factors such as motivation, health, maturity, and attitude. As a result, it is impossible to predict what special assistance will be required by each visually impaired student until his or her visual functioning has been properly assessed by a specialist teacher of the blind or the Provincial Resource Services.

Functional vision assessment in the educational environment, carried out by a specialist teacher of the blind, will encompass the following: the physical environment of the classroom (lighting, displays, seating arrangements); the suitability of materials (size of print, colour, contrast, use of specialized equipment); educational expectations (amount of copying from the chalkboard, length of assignments); social interaction (relationship with peers, involvement in extracurricular or recreational activities); and mobility (in the classroom, halls, schoolyard, and gymnasium).

Classroom teachers can help resource personnel to assess the student's classroom needs by providing detailed information on his or her special accommodations, mobility skills, and social interaction (see Form B in Appendix A). Information supplied by the parents (see Form A in Appendix A) will also help the specialist teacher to assess the student's educational needs.

The specialist teacher will assist the classroom teacher in making the curriculum adaptations and adjustments in classroom setting that the visually impaired student requires.

The student should be monitored regularly for fluctuations in his or her eye condition, so that the classroom setting and educational materials can be adjusted accordingly. As the student moves through the grades, he or she will face changes such as smaller print size and increased quantities of reading material and assignments. The student's response to these changes must be monitored so that appropriate equipment, materials, or other help is available as it is needed.

EVALUATION OF STUDENT ACHIEVEMENT

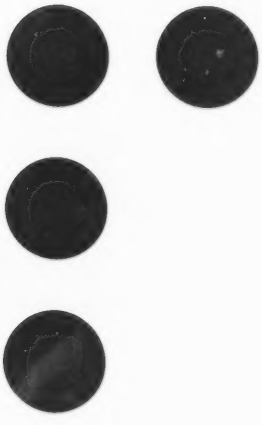
Provided that any special equipment and/or necessary adaptations are in place, teachers should expect the same quality of work from visually impaired students as from their sighted peers. Assignments should be completed, and handed in at the designated time. The visually impaired student should come prepared with textbooks, notes, paper, and writing tools. He or she should arrive on time for class and follow the rules and regulations of the school.

When assessing and evaluating visually impaired students, teachers should keep in mind the length of assignments, their appropriateness (for example, written explanations versus map work or diagram labelling), and the amount of time allowed for tests. Assignments may need to be shortened because of the extra time visually impaired students require to complete them.

Teachers should help visually impaired students to develop skills of self-evaluation, which they might not develop on their own. If they are unable to see what others in the class are doing (for example, how many are raising their hands when a question is asked), they cannot establish a satisfactory image of their degree of participation. Teachers can be of great assistance in helping these students to see themselves.

PROGRAM EVALUATION

The visually impaired student's program should be based on ministry curriculum guidelines or circulars, as appropriate, and on the curriculum suggestions provided in this document. Program evaluation should compare stated curriculum objectives with the student's actual classroom activities and achievement. Assessment of the program's appropriateness should take into account the student's level of ability and visual functioning.



APPENDIXES

FORM A: INFORMATION/CLASSROOM OBSERVATION FORM

This form may be filled in by the teacher for the information of specialist teachers of the blind and other resource personnel.

Student's Name _____ Date of Birth _____

School _____ Grade _____

School Mailing Address _____

_____

Postal Code _____ School Telephone _____ Board of Education _____

Principal _____ Teacher or Guidance Counsellor _____

A. Optical Aids

Does the student have glasses? _____ contacts? _____ both? _____

	Glasses		Contact Lenses		Comment
	Yes	No	Yes	No	
Does the student wear them?					
Do they appear to fit comfortably?					
Do lenses appear tinted?			N/A	–	
Are glasses in good condition?			N/A	–	
Does the student remove them at any time while at school? (Indicate when.)					

B. Accommodations

Does any regular class material in your program appear visually inappropriate?

Texts _____ Charts _____ Maps _____ Dittos _____ Chalkboard _____

_____

_____

Is any special equipment currently being used because of vision problems? Specify. _____

_____

_____

_____

Is the student fulfilling the same expectations as the rest of the class with regard to quality and quantity of work? _____

_____

_____

What areas of the program are being omitted and/or modified to accommodate a vision problem? Specify _____

_____

_____

What activities does the student appear to avoid because of vision difficulty? _____

_____

How far from activities must the student be? _____

Chalkboard _____

Desk activities _____

Charts _____

Overhead _____

Do differences in light affect the student's performance? _____

_____

How much extra time per day do you spend on this student? _____

_____

C. Mobility

Does the student appear to use vision when moving about? _____

_____

_____

Does the student display hesitancy moving in the classroom? _____ in the halls? _____

outdoors? _____ on the stairs? _____ at recess? _____ in phys ed? _____

Does the student participate in the entire physical education program without modification? _____

_____

Does the student actively participate with peers during recess and/or break? _____

_____

Does the student require assistance in everyday routines? _____

_____

D. Social Interaction

Has the lack of vision interfered with the student's forming relationships with peers? Explain _____

_____

_____

_____

Is the student's class participation comparable with that of peers? _____

_____

_____

E. Possibility of Visual Response

If the student does not currently use vision for learning, please note any observation that might indicate a visual response (e.g., awareness of light or reflection, direct picking up of object, reaction to person or object). _____

Have these responses been observed consistently? _____

_____

_____

F. Additional Information

Is there any additional information that would be helpful to assessors (e.g., not English-speaking, non-verbal, does not respond well to strangers, additional disability)? _____

_____

_____

_____

_____

_____ _____

Date Classroom Teacher

_____ _____

Date Principal

Adapted with permission from the Metro Special Program (Vision) of the Board of Education for the City of North York.

FORM B: INFORMATION/OBSERVATION FORM

This form may be filled in by parents for the information of specialist teachers of the blind and other resource personnel.

Student's Name _____

Name(s) of Parent(s) _____

_____

Address _____

_____

Postal Code _____ Telephone _____

Name of Ophthalmologist _____

Address _____

_____

_____

Postal Code _____ Telephone _____

When was the visual disability diagnosed? _____

Are there other factors that could interfere with visual functioning (e.g., medication, lengthy illness)? _____

_____

A. Optical Aids

Aid	Yes	No	Date of Prescription
Glasses			
Contact lenses			
Other			

			Comments
Uses aid as directed by doctor			
Takes responsibility for care of the aid			
Has adjusted to aid			
Accepts aid			
Receives special eye treatment at home (e.g., drops, pills). Please specify.			

B. Accommodations

1. What are your child's activities in the home (approximate distances between activities, approximate time spent on each)? _____

_____

_____

_____

2. In what ways is your son or daughter actively involved with friends in the neighbourhood? _____

3. What responsibilities does your son or daughter have in the home? in the neighbourhood? _____

4. In what recreational and/or cultural activities is your child enrolled (music lessons, sports, nursery school, etc.)? Are any visual modifications required? _____

5. Do you feel that your son or daughter is performing and participating as independently as his or her sighted friends? _____

C. Mobility

How does your son or daughter move about?

	Independently	With verbal direction	With physical assistance
Familiar places			
Less familiar			
Totally new			

_____ Date

_____ Signature of Parent

Adapted with permission from the Metro Special Program (Vision) of the Board of Education for the City of North York

FORM C: FUNCTIONAL VISION OBSERVATION FORM

This form may be filled in by the teacher in advance of a medical assessment and should accompany the student to the examination. The assistance of a specialist teacher may be required.

Student's Name _____ School Address _____

Date of Birth _____

Sex _____ Postal Code _____ Telephone _____

Name(s) of Parent(s) _____

_____

Address _____

_____

Postal Code _____ Telephone _____

All glasses and optical aids should be taken to the appointment. Samples of the student's work and of what he or she is expected to read should also be taken.

1. Physical arrangement of the classroom (window locations, colour of chalkboard, desk location, lighting, etc.) _____

2. Colour recognition (matching, etc.) _____

3. Near vision

   a) reading (ability to read mimeographed material, reading posture, reading level) _____

b) penmanship (size, legibility, spacing, arrangement on page, etc.)

c) math (column alignment, spacing, discrimination of numbers, etc.)

d) spelling

e) reading of maps, diagrams, graphs, pictures

4. Distance vision

a) physical education (movement, body awareness, catching objects, target focus)

b) travelling in and around school (stairs, halls, classrooms, schoolyard, to and from home)

c) chalkboard (distance from, copying from, reading from)

d) other audio-visual teaching aids (overhead, films, TV, etc.)

5. Aids

a) optical (glasses, magnifiers, telescope)

b) non-optical (tilt-top desk, black lines, pen colour, special lighting, type of lamp, etc.) _____

6. Organizational skills (locker, desk, assignments) _____

7. Resource services available _____

8. Sight-enhancement aids (closed-circuit TV, large-screen computer, etc.) available _____

9. Additional comments _____

_____ _____

Name of Classroom Teacher Date

FORM D: FUNCTIONAL VISION ASSESSMENT REPORT

This form may be filled in by the examining doctor.

Patient's Name _____ File No. _____

Date of Birth _____ Examination Date _____

Sex _____ School Address and Telephone _____

Name(s) of Parent(s) _____

_____

Address _____

_____

Postal Code _____ Telephone _____

1. *Diagnosis* (primary) _____

(secondary) _____

2. *Prognosis* (circle one) stable uncertain improvement deterioration

3. *Visual Acuities*

		Distance (in metres)	Near (in centimetres)
Unaided	right eye		
	left eye		
Aided	right eye		
	left eye		

4. *Visual Field*

(Circle one) no abnormality central defect peripheral defect other abnormality

Comments _____

_____

Implications _____

_____

_____

_____

5. *Colour Vision*

(Circle one) no abnormality not tested abnormal

Comments _____

_____

_____

6. *Binocular Status*

(Circle one) monocular strabismic non-strabismic

Comments _____

_____

_____

7. *Nature of Low-Vision Therapy*

The following sight-enhancement aids have been prescribed:

_____

Name of Aid*	Type	Intended Use and Special Instructions	Supplier

*Please use the following abbreviations: TS (telescope), MC (microscope), SM (stand magnifier), HM (hand magnifier), SP (spectacle mounting), CCTV (closed-circuit television system), LC (light control)

_____

8. *Other Special Considerations*

a) Special seating requirements _____

_____

b) Special lighting requirements _____

_____

c) Restrictions on physical activities _____

_____

d) Other _____

_____

_____

Low-vision reassessment recommended _____

_____ _____

Signature of Examining Doctor Date

FORM E: FUNCTIONAL VISION FOLLOW-UP REPORT

This form may be filled in by the classroom and/or specialist teacher as a follow-up to be sent to the doctor.

Student's Name _____

Date of Birth _____ Sex _____

Name(s) of Parent(s) _____

_____

Address _____

_____

Postal Code _____ Telephone _____

School Address and Telephone _____

_____

_____

_____

1. How effectively is the device being used? _____

2. What is the student's reaction to the device? _____

3. What are his or her peers' reactions? _____

4. Do you think the student needs to be reassessed before the scheduled follow-up date? If so, why? _____

_____ _____

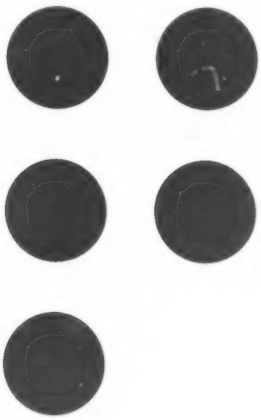
Name and Title of Person Completing Form Date

APPENDIX B: PROVINCIAL SERVICES AND PROGRAMS

PROVINCIAL RESOURCE SERVICES

The Ministry of Education has a team of specialist teachers of the blind available to all school boards in the province. The team provides services in both English and French at all levels from Junior Kindergarten to the Ontario Academic Courses.

Teachers in Provincial Resource Services are not meant to take the place of specialist teachers of the blind hired by school boards. The mandate of the team is to provide suggestions and make recommendations concerning the programs of partially sighted and blind students. The team members do not provide day-to-day instruction.



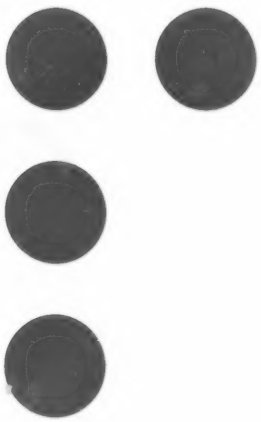
Upon request, a member of Provincial Resource Services will travel to a local school and offer suggestions and assistance to administrators and teachers planning a visually impaired student's academic program. There is no charge to the board or school for this service.

Requests for service in English should be made to:

Provincial Resource Services
The W. Ross Macdonald School
350 Brant Avenue
Brantford, Ontario
N3T 3J9
Telephone: (519) 759-0730

Requests for service in French should be made to the W. Ross Macdonald School, as above, or to:

The Provincial Resource Specialist Teacher of the Blind
Ministry of Education Regional Office
Midnorthern Ontario Region
199 Larch Street, 7th Floor
Sudbury, Ontario
P3E 5P9
Telephone: (705) 675-4436



THE RESOURCE SERVICES LIBRARY

The Resource Services Library at the W. Ross Macdonald School, Brantford, Ontario, has been established by the Ministry of Education to lend large-print books, braille, tapes, and tactile materials to school boards throughout the province.

The following procedures set out by the Ministry of Education govern the loan of such materials:

a) Materials will be loaned free of charge for the school year. Materials required for elementary and secondary school students must be ordered by the students' school. Materials will not be sent directly to individual students.

b) While on loan, the books and materials will be the responsibility of the borrowing school, which must return them by the end of June of the school year for which they have been borrowed. If the same books are required for the next school year or for some period during the summer months, they should be returned to the library before the end of June, with a note attached requesting immediate reissue of the materials to the school. In such cases, it is suggested that books be sent to the library at least two weeks before the end of June to allow for return to the school before June 30. Parcels of materials weighing less than seven kilos may be sent by mail without charge if they are marked "Materials for the blind post-free".

c) Before books may be issued to a school for a print-impaired student, his or her application must be approved. An "Application for Consideration for Large Print, Braille, and Audio Tapes" form must be filled in (by an ophthalmologist and a classroom teacher or resource consultant), signed, and returned to the Resource Services Library.

d) At the same time as approval is requested, an order for the texts required should be sent. Title, author, publisher, and copyright date should be included for each text. Information on supplementary reading material is available from the library's information pamphlet on leisure reading.

e) If the books requested are not available, the Resource Services Library will attempt to have large-print, braille, or taped versions of the desired books made. Before it can produce the materials, the library must secure the publishers' permission. The whole procedure takes six to eight weeks or more for large print, twelve to fifteen weeks for tape, and six to eight months for braille. *Schools must provide two copies of the regular-print book when brailling or taping is requested.* The regular-print book will be destroyed in the production process.

Books that are in the form of collected works, such as poems or short stories, may require up to one hundred different copyright permissions before the book can be reproduced. Securing so many copyright permissions takes time, so the school requesting such a book should be prepared for a considerable wait.

f) Only those texts listed on *Circular 14* or approved by the school board will be produced.

g) Schools that have books on loan from the Resource Services Library *will be held financially responsible for lost or damaged books* if such damage is beyond what could be considered normal wear.

h) The Resource Services Library reserves the right to request that a member of the educational staff of the W. Ross Macdonald School visit the classroom of a student using materials on loan from the library, to evaluate the student's degree of disability and determine the value of the materials to the student's program.

All requests and inquiries regarding the library or the service provided should be addressed to:

The Resource Services Library
The W. Ross Macdonald School
Brantford, Ontario
N3T 3J9
Telephone: (519) 759-0730

ASSISTIVE DEVICES PROGRAM

The Assistive Devices Program (ADP) sponsored by the Ministry of Health was created to assist eligible individuals and their families with the significant cost of selected medically necessary devices designed to replace an absent, or augment a weakened, physical function; prevent deterioration; minimize pain; and support, activate, and/or protect parts of the body. Devices purchased through ADP must be used primarily for home and community purposes and are not to be used exclusively for educational purposes in a school setting.

The individual may, of course, obtain any of these devices in any manner he or she chooses. However, the Ministry of Health will assist with approximately 75 per cent of the cost of equipment or devices.

For those individuals with visual impairments, such devices as special lenses, variable-speed tape recorders, closed-circuit television systems, typewriters, braille and talking watches, braille writers, and some mobility aids are available.

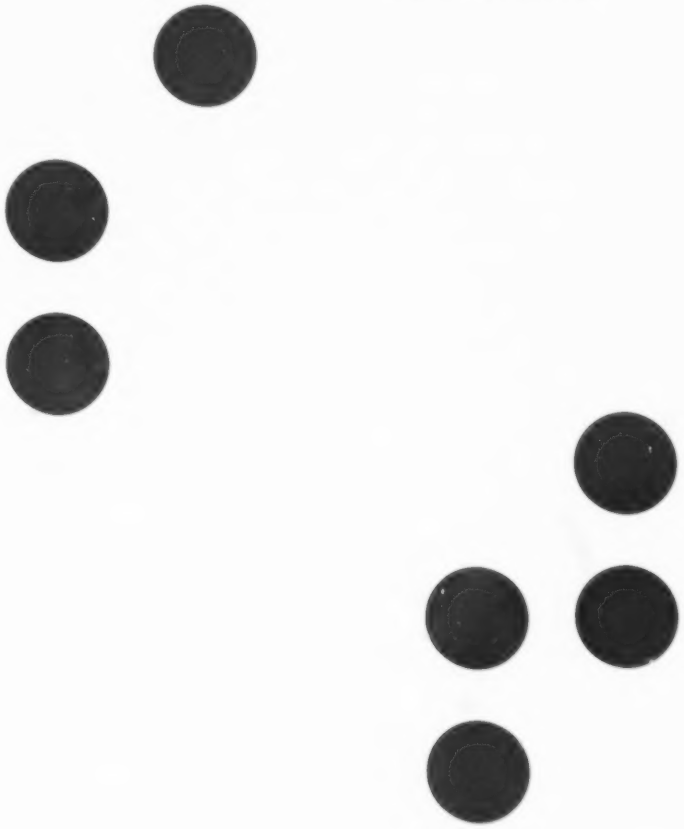
Individuals are eligible to make application to ADP if they have little significant usable vision and are unable to use print, or if their acuity or field loss, when corrected medically, surgically, and/or by ordinary contact lenses or eyeglasses, makes it difficult for them to perform visual activities common to their age and circumstances (for example, reading, writing, or getting around in unfamiliar surroundings).

Applications to purchase equipment must be made on the standard ADP supply/authorization form. This form must be completed by a physician (preferably an ophthalmologist) and an authorizer (such as an optometrist, an orientation and mobility instructor, or an authorized specialist teacher of the blind).

The Assistive Devices Program also provides for the leasing of some equipment, such as electronic (refreshable) braille devices, computers with enlarged screen output, synthetic speech devices, and special orientation and mobility equipment, where the cost of purchase and servicing would be high. Portable devices such as the VersaBraille, Brailink, and Viewscan Text System may be used both at home and at school when this can be done reasonably and safely.

Further information on the Assistive Devices Program may be obtained from:

The Assistive Devices Program
Ontario Ministry of Health
15 Overlea Boulevard, 6th Floor
Toronto, Ontario
M4H 1A9
Telephone: 1-800-268-6021



APPENDIX C: RESOURCES

BOOKS

Add-Ons: The Ultimate Guide to Peripherals for the Blind Computer User. Boston: National Braille Press, 1986.

American Association of Workers for the Blind. *The Nemeth Braille Code for Mathematics and Science Notation.* Rev. ed. Louisville, Ky.: American Printing House for the Blind, 1979.

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Bluhm, Donna L. *Teaching the Retarded Visually Handicapped.* Philadelphia: W. B. Saunders, 1968.

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Carroll, Thomas J. *Blindness: What It Is, What It Does, and How to Live With It.* Boston: Little, Brown, 1961.

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Fukurai, Shiro. *How Can I Make What I Cannot See?* New York: Van Nostrand Reinhold, 1974.

Henry, Eleanor. *Listen and Think B: Teacher's Handbook.* Toronto: McGraw-Hill, 1969.

Jan, James E. *Visual Impairment in Children and Adolescents.* New York: Grune and Stratton, 1977.

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Maloney, Patricia L. *Practical Guidance for Parents of the Visually Handicapped Preschooler.* Springfield, Ill.: Charles C. Thomas, 1981.

Mangold, Sally S. *A Teacher's Guide to the Special Education Needs of Blind and Visually Handicapped Children.* New York: American Foundation for the Blind, 1982.

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Russell, Hugh C., and Hipfner, Boyd F., eds. *Careers for the Blind Catalogue*. Toronto: Canadian National Institute for the Blind, 1978.

Scott, Eileen P. *Your Visually Impaired Student*. Baltimore: University Park Press, 1982.

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Spungin, Susan Jay. *Guidelines for Public School Programs Serving Visually Handicapped Children*. New York: American Foundation for the Blind, 1980.

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Vaughan, D., and Asbury, T. *General Ophthalmology*. Los Altos, Calif.: Lange Medical Publications, 1983.

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PERIODICALS

Canadian Journal for Exceptional Children
Publication Services
4-116 Education North
Faculty of Education
University of Alberta
Edmonton, Alberta
T6G 2G5

DVH Quarterly
The Council for Exceptional Children (Division of the Visually Handicapped)
1920 Association Drive
Reston, Virginia 22091
U.S.A.

Journal of Visual Impairment and Blindness
American Foundation for the Blind
15 West 16th Street
New York, New York 10011
U.S.A.

Long Cane News
15 West 16th Street
New York, New York 10011
U.S.A.

Raised Dot Computing Newsletter
Raised Dot Computing Inc.
408 South Baldwin Street
Madison, Wisconsin 53703
U.S.A.

Technology Update: The Monthly Newsletter on Technology for Blind and Partially Sighted People
399 Sherman Avenue
Suite 12
Palo Alto, California 94306
U.S.A.

AUDIO-VISUAL MATERIALS

Blind Determination. Tom Kelly, CBC, "Man Alive", 1984. 16 mm, colour, 28 min. Available from the Antoinette Ritchie Gundy Charitable Foundation.

Craig. Ontario Educational Communications Authority, 1974. Colour, 20 min.

Listen and Think Tape Series. Educational Development Laboratories. McGraw-Hill, 1968.

Not Without Sight. American Foundation for the Blind, 1974. 16 mm, colour, 20 min.

What Do You Do When You See a Blind Person? Si Fried Productions, 1971. 16 mm, colour, 14 min. Available from the American Foundation for the Blind.

RESOURCE AGENCIES AND SUPPORT GROUPS

American Foundation for the Blind
15 West 16th Street
New York, New York 10011
U.S.A.

American Printing House for the Blind
1839 Frankford Avenue
Louisville, Kentucky 40206
U.S.A.

American Thermoform Corporation
2311 Travers Avenue
City of Commerce, California 90040
U.S.A.

Ann Arbor Publishing
Isabel Wilson Inc.
17 Lascelles Boulevard, Apt. 808
Toronto, Ontario
M4V 2B6
Tel.: (416) 537-5749

Association for Education and Rehabilitation of the Blind and Visually Impaired (AER)
206 N. Washington Street, Suite 320
Alexandria, Virginia 22314
U.S.A.

The Samuel Harris Baker Foundation
500 University Avenue, Suite 900
Toronto, Ontario
M5G 1V7
Tel.: (416) 598-2559

Canadian National Institute for the Blind (CNIB)
Ontario Division
1929 Bayview Avenue
Toronto, Ontario
M4G 3E8
Tel.: (416) 486-2500
(See telephone directory for area offices.)

CNIB Technical Aids Department
Tel.: (416) 480-7458

Howe Press of the Perkins School for the Blind
Watertown, Massachusetts 02172
U.S.A.

Institute of Psychological Research
34 Fleury Street West
Montreal, Quebec
H3L 9Z9

Louise Kool & Galt Limited
1147 Bellamy Road North
Scarborough, Ontario
M1H 1H6
Tel.: (416) 439-4322

The Lighthouse
New York Association for the Blind
Low Vision Services
111 East 59th Street
New York, New York 10011
U.S.A.

Low Vision Association of Ontario
145 Adelaide Street West
Toronto, Ontario
M5H 3H4
Tel.: (416) 868-1001

Low Vision Clinic
The Hospital for Sick Children
555 University Avenue
Toronto, Ontario
M5G 1X8
Tel.: (416) 598-6525

John Milton Society for the Blind in Canada
40 St. Clair Avenue East, Suite 202
Toronto, Ontario
M4T 1M9
Tel.: (416) 960-3953

The W. Ross Macdonald School for the Blind
Brantford, Ontario
N3T 3J9
Tel.: (519) 759-0730

Ontario Blind Sports Association
1220 Sheppard Avenue East
Willowdale, Ontario
M2K 2X1
Tel.: (416) 495-4163

Stoelting Company
1350 South Kostner Avenue
Chicago, Illinois 60623
U.S.A.

Telesensory Systems Inc.
3408 Hillview Avenue
P.O. Box 10099
Palo Alto, California 94304
U.S.A.

Ulverscraft Large Print Books
5259 Cindy Lane
Burlington, Ontario
L7L 3Y4
Tel.: (416) 637-8734

Views for the Visually Impaired
Provincial Office
755 Breckenridge Road
Mississauga, Ontario
L4Y 2R4
Tel.: (416) 277-4061

Organization for the Education of the Visually Handicapped (OEVH - Ontario)
The W. Ross Macdonald School
Brantford, Ontario
N3T 3J9
Tel.: (519) 759-0730

School of Optometry
Centre for Sight Enhancement
Faculty of Science
University of Waterloo
Waterloo, Ontario
N2L 3G1
Tel.: (519) 888-4062

Ontario Ministry of Community and Social Services
Special Services at Home

Central Region
P.O. Box 910
34 Simcoe Street
Barrie, Ontario
L4M 1A1
Tel.: (705) 737-1311

1140 Burnhamthorpe Road West
Suite 212
Mississauga, Ontario
L5C 4E9
Tel.: (416) 897-3100

Toronto (Regional Office)
2195 Yonge Street, 9th Floor
Toronto, Ontario
M7A 1G2
Tel.: (416) 965-1433

Northern Region
20 Main Street South
Kenora, Ontario
P9N 1S7
Tel.: (807) 468-3056

8 Hudson Bay Avenue
Kirkland Lake, Ontario
P2N 2H7
Tel.: (705) 567-3391

222 McIntyre Street West
North Bay, Ontario
P1B 2Y8
Tel.: (705) 474-3540

123 March Street
Sault Ste Marie, Ontario
P6A 2Z5
Tel.: (705) 759-8244

St. Andrew's Place
11 Larch Street, 8th Floor
Sudbury, Ontario
P3E 4T5
Tel.: (705) 675-4544

11 Elm Street North, Ground Floor
Timmins, Ontario
P4N 6A3
Tel.: (705) 267-7901

710 Victoria Avenue, Suite 301
Thunder Bay, Ontario
P7C 5P7
Tel.: (807) 475-1345

Southeast Region
1055 Princess Street
Kingston, Ontario
K7L 5T3
Tel.: (613) 545-0539

10 Rideau Street, 7th Floor
Ottawa, Ontario
K1N 9J1
Tel.: (613) 234-1188

60 Hunter Street East
Peterborough, Ontario
K9H 1G5
Tel.: (705) 742-9292

Southwest Region
119 King Street West, 7th Floor
Hamilton, Ontario
L8N 3Z9
Tel.: (416) 521-7280

495 Richmond Street, 6th Floor
London, Ontario
N6A 5A9
Tel.: (519) 438-5111

75 King Street South, 5th Floor
Waterloo, Ontario
N2J 1P2
Tel.: (519) 886-4700

250 Windsor Avenue, 6th Floor
Windsor, Ontario
N9A 6V9
Tel.: (519) 254-3288

Ontario Ministry of Education Regional Offices

Central Region
Heron's Hill Building
2025 Sheppard Avenue East, Suite 3201
Willowdale
M2J 1W4
Tel.: (416) 491-0330

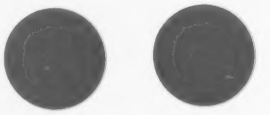
Eastern Region
1580 Merivale Road, 4th Floor
Ottawa
K2G 4B5
Tel.: (613) 225-9210

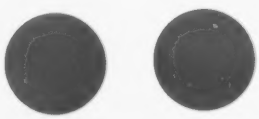
Midnorthern Region
199 Larch Street, 7th Floor
Sudbury
P3E 5P9
Tel.: (705) 675-4436

Northeastern Region
Box 3020
North Bay
P1B 8K7
Tel.: (705) 474-7210

Northwestern Region
Box 5000
Thunder Bay
P7C 5G6
Tel.: (807) 475-1581

Western Region
759 Hyde Park Road
London
N6H 3S6
Tel.: (519) 472-1440





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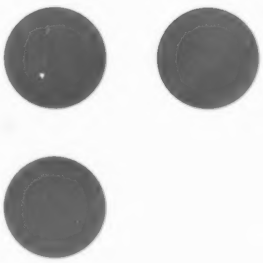

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